Vol. 1023 Number 3

OFFICIAL GAZETTE

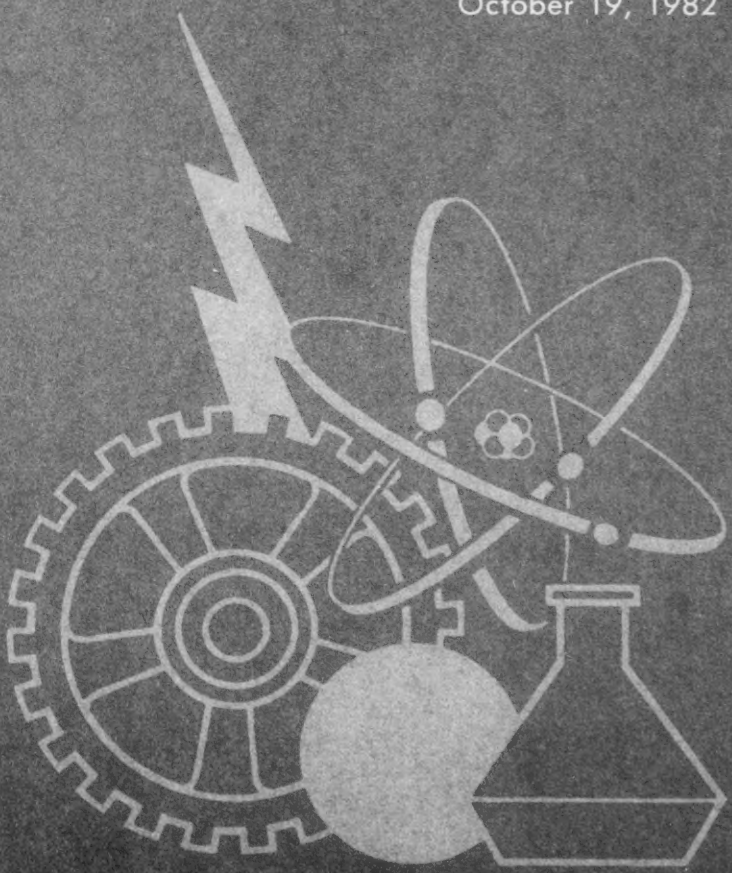
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

October 19, 1982



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 19, 1982 Volume 1023 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,215,850, Re. S.N. 402,938, Filed July 29, 1982, Cl. 254/350, WINCH, Reinhold A. Haase, et al., Owner of Record: *Dutton-Lainson Co., Hastings, Nebr.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 245

4,257,415, Re. S.N. 403,120, Filed July 29, 1982, Cl. 128/200.21, PORTABLE NEBULIZER TREATMENT APPARATUS, Howard Rubin, Owner of Record: *Inventor,* Attorney or Agent: Rodman Steele, Jr., et al., Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,747,620, Reexam. No. 90/000,249, Requested: Aug. 30, 1982, Cl. 137/119, IRRIGATION SPRINKLER SYSTEM CONTROL EMPLOYING PILOT OPERATED PRESSURE ACTUATED AND SEQUENCED VALVE ASSEMBLY, Carl L.C. Kah, Jr., Owner of Record: *Requester,* Attorney or Agent: James W. Miller, Ex. Gp.: 340, Requester: The Toro Co., Minneapolis, Minn.

3,982,419, Reexam. No. 90/000,256, Requested: Sept. 13, 1982, Cl. 73/13G, APPARATUS AND METHOD OF DETERMINING ROTATIONAL OR LINEAR STIFFNESS, John T. Boys, Owner of Record: *Requester,* Attorney or Agent: Aaron Nerenberg, Ex. Gp.: 240, Requester: SPS Technologies, Inc., Jenkintown, Pa.

4,053,845, Reexam. No. 90/000,253, Requested: Sept. 9, 1982, Cl. 330/4.3, OPTICALLY PUMPED LASER AMPLIFIERS, Gordon Gould, Owner of Record: *Inventor,* Attorney or Agent: Lerner, David, Littenberg & Samuel, Ex. Gp.: 222, Requester: Control Laser, Inc., Orlando, Fla.

4,212,075, Reexam. No. 90/000,252, Requested: Sept. 3, 1982, Cl. 364/580, ELECTRICAL COMPONENT TESTING SYSTEM FOR COMPONENT INSERTION MACHINE, Gerald W. Cleversey, et al, Owner of Record: *Requester,* Attorney or Agent: William F. White, Ex. Gp.: 230 Requester: USM Corp., Beverly, Mass.

4,223,981, Reexam. No. 90/000,259, Requested: Sept. 17, 1982, Cl. 350/423, TELEPHOTO ZOOM LENS, Norio Mizutani, et al, Owner of Record: *Nippon Kogaku K.K., Tokyo, Japan,* Attorney or Agent: Shapiro & Shapiro, Ex. Gp.: 257, Requester: Cushman, Darby & Cushman, Washington, D.C.

4,230,175, Reexam. No. 90/000,257, Requested: Sept. 16, 1982, Cl. 165/46, HEAT EXCHANGER ELEMENT, Dieter Disselbeck, et al, Owner of Record: *Requester,* Attorney or Agent: Curtis, Morris & Safford, P.C., Ex. Gp.: 346, Requester: Hoechst Aktiengesellscaft, Frankfurt am Main, Fed. Republic of Germany

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Requests for Information on Status of Trademark Registrations

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an auto-

matic answering machine in the Trademark Search Library (Search Room) at 703-557-3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703-557-2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner for Trademarks.*

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,869,182, Nils B. Glifberg, BALL BEARING, Interference No. 99,772, decided Feb. 22, 1982, claim 1.

Patent No. 3,926,669, James J. Auborn, ELECTROCHEMICAL CELLS HAVING AN ELECTROLYTIC SOLUTION COMPRISING A COVALENT INORGANIC OXYHALIDE SOLVENT, Interference No. 99,876, decided June 18, 1981, claims 1–11, 13–15.

Patent No. 3,957,723, David Francis Lawson & Edward Leo Kay, FLAME AND SMOKE RETARDANTS FOR POLYVINYL CHLORIDE, Interference No. 99,770, decided Apr. 19. 1982, claim 1.

Patent No. 3,992,784, Eke Verschuur, Berend P. Ter Meulen, Teunis Van Herwijnen & Johannes Boom, THERMAN DEWATERING OF BROWN COAL, Interference No. 100,140, decided Apr. 28, 1982, claims 1 & 2.

Patent No. 4,001,248, Dennis M. Zimmerman & Winston S. Marshall, N-CYCLOALKYLMETHYL DECAHYDROISOQUINOLINES, Interference No. 100,293, decided May 26, 1982, claim 1.

Patent No. 4,012,564, James J. Auborn, ELECTROCHEMICAL CELLS HAVING AN ELECTROLYTIC SOLUTION COMPRISING A COVALENT INORGANIC OXYHALIDE SOLVENT, Interference No. 99,877, decided June 18, 1981, claims 1–14 & 16–19.

Patent No. 4,026,705, James V. Crivello & Siegfried H. Schroeter, PHOTO CURABLE COMPOSITIONS AND METHODS, Interference No. 100,337, decided Apr. 1, 1982, claims 1, 2 & 4.

Patent No. 4,041,172, Charles Brian Barlow, COMPOSITIONS AND METHODS FOR COMBATING INSECT PESTS OR FUNGAL PESTS OF PLANTS, Interference No. 100,028, decided Apr. 20, 1982, claim 11.

Patent No. 4,168,623, Charles E. Thomas, Jr., METHOD FOR DETERMINING VOLATILE CONTENT OF A SAMPLE, Interference No. 100,734, decided June 25, 1982, claims 1–8.

Patent No. 4,245,507, Thaddeus V. Samulski, TEMPERATURE PROBE, Interference No. 100,854, decided July 1, 1982, claims 1, 2, 8, 15 & 20.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Errata

The following registrations, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Feb. 2, 1982, Feb. 9, 1982, Apr. 20, 1982, May 18, 1982, June 1, 1982, July 13, 1982, and Aug. 3, 1982, were inadvertently issued:

TMOG Feb. 2, 1982	TMOG June 1, 1982
1,188,528	1,196,856
TMOG Feb. 9, 1982	TMOG July 13, 1982
1,189,616	1,200,871
TMOG Apr. 20, 1982	TMOG Aug. 3, 1982
1,193,920	1,203,728
TMOG May 18, 1982	
1,195,877	

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Oct. 19, 1982

4,140,854	4,304,714	4,334,902	4,341,812
4,155,278	4,305,446	4,335,264	4,342,044
4,197,808	4,307,182	4,335,850	4,342,238
4,202,825	4,307,274	4,335,993	4,342,737
4,230,187	4,308,083	4,336,637	4,342,903
4,230,497	4,309,424	4,336,785	4,342,940
4,233,207	4,313,155	4,337,143	4,343,283
4,235,662	4,315,685	4,337,159	4,343,299
4,238,731	4,320,634	4,337,353	4,343,312
4,242,212	4,320,646	4,337,511	4,343,773
4,244,974	4,322,626	4,337,568	4,343,792
4,246,685	4,323,122	4,338,166	4,343,801
4,250,288	4,323,439	4,338,208	4,344,206
4,263,262	4,324,796	4,338,319	4,344,383
4,266,084	4,325,283	4,339,871	4,344,402
4,268,896	4,326,569	4,339,939	4,344,407
4,272,204	4,326,810	4,340,219	4,344,572
4,284,540	4,326,972	4,340,726	4,344,599
4,287,485	4,327,277	4,340,782	4,344,842
4,288,258	4,329,535	4,340,806	4,344,854
4,293,576	4,329,937	4,340,829	4,345,927
4,297,089	4,332,154	4,341,184	4,345,929
4,300,939	4,332,529	4,341,204	4,346,202
4,302,358	4,333,222	4,341,252	4,346,335
4,303,684	4,333,869	4,341,458	4,346,357
4,303,796	4,334,238	4,341,805	4,346,714
4,304,507	4,334,269	4,341,811	4,347,148

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 2909-187]

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41 (a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97-247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on October 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97-247.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking was published in the **Federal Register** on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the *Official Gazette* on August 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until August 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on September 10, 1982 at 47 FR 40134-40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97-247.

Public Law 97-247

Pub. L. 97-247, signed August 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97-247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97-247. That definition is hereby incorporated into the patent rules of practice in § 1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective October 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97-247.

Section 1.9(d) defines a small business concern by reference to and incorporation of § 121.3-18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an

independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to § 1.9(f), or if the concern came under an obligation to assign any rights to any individual or concern which could not qualify as a small entity.

Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.

Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under § 1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§ 1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of § 1.9 has been changed from that proposed so as to incorporate into § 1.9(d), the definition established by the Small Business Administration in § 121.3–18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of § 1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the

patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply

Pub. L. 97–247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97–247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in § 121.3–18 of Title 13, Code of Federal Regulations. This will enable persons to utilize § 1.9(d) without also referring to a copy of Title 13, CFR.

Comment

One comment argued that § 1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in § 1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3–18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3–18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in § 1.9(d).

Reply

The definition of a small business concern as established by the Small Business Administration is now incorporated into § 1.9(d).

Implementation of §§ 1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Pub. L. 97–247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97–247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for

consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97-247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§ 1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3-18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§ 121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97-247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly cr indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§ 1.27 Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in § 1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in § 1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

Dated: September 23, 1982.

Gerald J. Mossinghoff,

Commissioner of Patents and Trademarks.

[FR Doc. 82-26941 Filed 9-29-82; 8:45 am]

BILLING CODE 3510-16-M

SMALL BUSINESS ADMINISTRATION

13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

AGENCY: Small Business Administration.

ACTION: Final rule.

SUMMARY: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub.L. 97–247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, September 10, 1982).

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:
R. Franklin Burnett (703) 557–3054.
Harvey Bronstein (202) 653–6373.

SUPPLEMENTARY INFORMATION: Pub. L 97–247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on August 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

Discussion of Comments

One comment from the American Patent Law Association, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment suggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the invention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to

the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on September 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * *" (House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (September 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding § 121.3–18 to read as follows:

§ 121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

Dated: September 23, 1982.

Robert B. Webber,

Acting Administrator.

[FR Doc. 82–28940 Filed 9–29–82; 8:45 am]

BILLING CODE 8025–01–M

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

PATENT EXAMINING CORPS

REEXAMINATIONS

OCTOBER 19, 1982

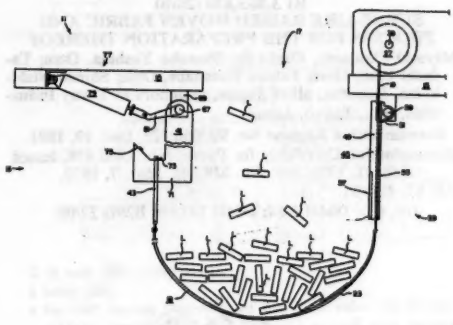
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,104,156 (23rd)

DETACHABLE SLING LETDOWN APPARATUS FOR LUMBER SORTER

John K. Fletcher, Hot Springs, Ark., assignor to Harvey Engineering & Manufacturing Corporation, Hot Springs, Ark.

Reexamination Request No. 90/000,001, Jul. 1, 1981.
Reexamination Certificate for Patent No. 4,104,156, issued Aug. 1, 1978, Ser. No. 805,901, Jun. 13, 1977.
U.S. Cl. 209/521 **Int. Cl.[3] B65G 47/34**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 was previously disclaimed.

Claims 2–12, having been finally determined to be unpatentable, are cancelled.

New claims 13–24 are added and determined to be patentable.

13. In a lumber sorter of the type having frame means defining a plurality of bays for receiving pieces of lumber, each of said bays being provided with at least a pair of elongated flexible members defining cooperative forward and rearward open-topped slinglike cradles which support the lumber pieces as they are systematically dropped therein, and means for selectively controlling the height of said forward and rearward cradles and, at least, a pair of automatically operable coupler means for selectively coupling and uncoupling the respective dangling ends of said pair of elongated flexible members from said frame means for enabling said dangling ends thereof to readily be coupled to said frame means, the improvement comprising:

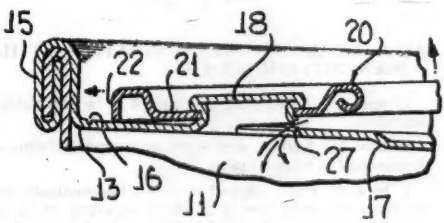
in each coupler means, single hook means carried pivotally from said frame means for rotation between a coupled position depending vertically downwardly from its pivot point and a coupling position projecting substantially horizontally from its pivot point, said coupler means, further, including eye means carried from the dangling end of the respective said flexible member for hooking directly to said hook means to cooperate with said hook means to act as the sole load bearing means for each coupler means of each such cradle.

B1 4,182,460 (24th)

LEVER ACTION TAB SYSTEM FOR EASY OPENING ENDS

Albert J. Boik, Jr., Frankfort; Arnold R. Boik, Chicago, both of Ill., assignors to Continental Group, Inc., New York, N.Y.

Reexamination Request No. 90/000,076, Sep. 28, 1981.
Reexamination Certificate for Patent No. 4,182,460, issued Jan. 8, 1980, Ser. No. 656,388, Jul. 27, 1967.
U.S. Cl. 220/271 **Int. Cl.[3] B65D 41/32**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–10, 16, 18, 19 and 21–54 is confirmed.

Claims 11–15, 17 and 20 are determined to be patentable as amended:

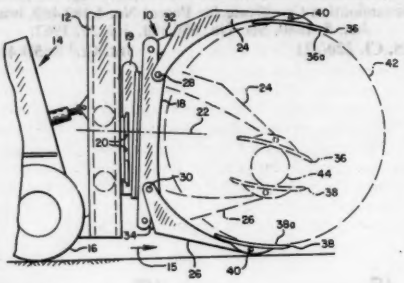
1. In an assembly including a panel having a removable portion, and a pull tab secured to said panel and restricted substantially against hinging relative to an adjacent portion of said panel; the improvement residing in a line of weakening formed in said panel removable portion immediately adjacent the connection between said pull tab and said panel for effecting the initial rupture of said panel upon the application of a panel rupturing force to said pull tab and the formation of hinge means in said panel with said hinge means including said connection and facilitating the hinging of said pull tab for effecting the further and separate rupture of said panel remote from said connection and the removal of said panel portion.

B1 4,209,280 (25th)

LIFT TRUCK LOAD CLAMP HAVING NONRESILIENT CONTACT PAD SURFACES TEXTURED FOR DIRECTIONALLY VARIABLE RESISTANCE TO SLIPPAGE

Edward D. Bittner, Hillsboro, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Reexamination Request No. 90/000,084, Oct. 13, 1981.
Reexamination Certificate for Patent No. 4,209,280, issued Jun. 24, 1980, Ser. No. 970,195, Dec. 18, 1978.
U.S. Cl. 414/620 Int. Cl.[3] B66F 9/18



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 4, 6 and 8 are determined to be patentable as amended.

Claims 2, 3, 5 and 7, dependent on amended claims, are determined to be patentable.

1. In a lift truck adapted to move longitudinally in a direction of travel having a lifting apparatus at its forward end for raising and lowering a load vertically, a load-handing attachment mounted on said lifting apparatus *for handling a load having a deformable surface of paper or the like, said attachment* comprising:

(a) a frame mounted on a portion of said lifting apparatus so as to be selectively raised and lowered vertically by said lifting apparatus;

(b) a pair of forwardly-projecting selectively openable and closeable opposing clamp arms mounted upon said frame;

(c) power means mounted upon said frame for selectively opening and closing said clamp arms;

(d) a pair of contact pads, each connected to a forward end of a respective one of said pair of clamp arms, said contact pads having opposing load-engaging nonresilient surfaces;

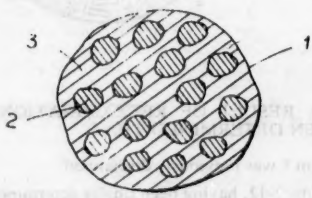
(e) means defining an array of elongate, generally parallel, spaced grooves formed in each of said load-engaging nonresilient surfaces separated by elongate nonresilient lands between said grooves *having nonresilient land surfaces at the tops thereof for engaging said deformable surface of said load,* said grooves and lands being directionally oriented so as to extend along their lengths in a direction generally longitudinal of said lift truck in the direction of travel thereof for sliding longitudinally with respect to [a] *said* load as said lift truck moves forwardly along said direction of travel to engage said load , *said load-engaging nonresilient surfaces being free of any protrusions or depressions, having sides or edges extending in a direction along said surfaces other than the longitudinal direction of said grooves and lands, which effectively resist said longitudinal sliding of said grooves and lands with respect to said deformable surface while in contact therewith, said land surfaces having sufficient width, relative to the width of said grooves, to form nonpermanent indentations in said deformable surface while avoiding any cutting or permanent indentation thereof when engaging said deformable surface with sufficient force to enable said clamp arms to lift said load vertically.*

B1 3,865,678 (26th)

SUEDE-LIKE RAISED WOVEN FABRIC AND PROCESS FOR THE PREPARATION THEREOF

Miyoshi Okamoto, Osaka-fu; Shusuke Yoshida, Otsu; Tadashi Imai, Otsu; Tatsuo Watanabe, Otsu; Shinzo Nishikaku, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan.

Reexamination Request No. 90/000,123, Dec. 10, 1981.
Reexamination Certificate for Patent No. 3,865,678, issued Feb. 11, 1975, Ser. No. 338,962, Mar. 7, 1973.
U.S. Cl. 428/91
Int. Cl.[3] D04H 1/64; D04H 111/00; B29D 27/00



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–50 is confirmed.

1. A suede-like raised woven fabric which comprises raised fibers covering the surface of said fabric and an elastic polymer impregnated throughout said fabric, wherein said fabric is woven and comprises warp and weft yarns, the weft of said fabric being a yarn consisting of a bundle of extra fine fibers, the mono-filament denier of which is 0.0001–0.4 denier, the warps of said fabric are yarns having a coil-like crimp capacity, the total denier of said warp yarn being 50–300 denier, and said raised fibers consisting mainly of said extra fine fibers which constitute said weft of said fabric.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,058

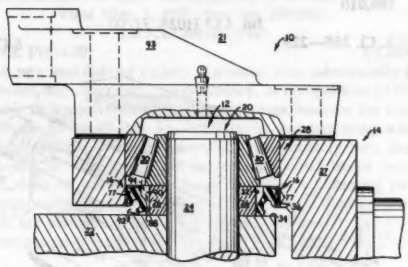
SEAL AND SEAL ASSEMBLY

James H. Povejsil, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Original No. 4,210,339, dated Jul. 1, 1980, Ser. No. 4,791, Dec. 26, 1978. Application for reissue Aug. 18, 1980, Ser. No. 179,121

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 31 Claims



1. A seal (16), comprising:

a body (38);

a leg (40) having first, second and third sides (46,48,50), a middle portion (56) and first and second end portions (52,54) and being connected at the first end portion (52) to the body (38), said first side (46) being linear *and straight along its full length* and generally opposed to said second side (48), said second side (48) having a linear *and straight* portion (64) intersecting the third side (50) and being *oriented to extend* parallel to the first side (46) and an arcuate portion (62) defining an arcuate surface (58) extending curvilinearly inwardly in a direction generally toward the first side (46) and defining a reduced cross-sectional area of said leg (40) at the middle portion (56) relative to the second end portion (54), said third side (50) being [linear] *straight along its full length* and intersecting said first and second sides (46,48) at the second end portion (54), said second end portion (54) being of a construction sufficient for being controllably deflectable relative to said first end portion (52) in response to a force exerted on at least one of the first and third sides (46,50); and

first and second sealing areas (42,44) positioned on said leg (40) adjacent the intersection of the first and third sides (46,50), and the intersection of the second and third sides (48,50), respectively.

Re. 31,059

EMERGENCY PORTION FOR A BRAKE CONTROL VALVE

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Original No. 4,106,819, dated Aug. 15, 1978, Ser. No. 825,748, Aug. 18, 1977. Application for reissue Jul. 23, 1980, Ser. No. 171,603

Int. Cl.³ B60T *15/32, 15/42*

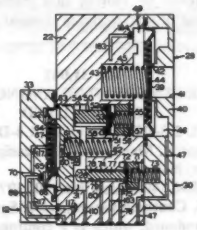
U.S. Cl. 303—38 36 Claims

1. For use in a brake apparatus including a brake pipe, [an auxiliary reservoir,] an emergency reservoir and a quick action chamber each normally charged to a certain chosen pressure, a brake cylinder and a fluid-pressure-operated service valve device, a fluid-pressure-operated emergency valve device operative in conjunction with said service valve device in response to a reduction of the pressure in the brake pipe at an emergency rate to effect [the supply of fluid under pressure from said reservoirs to said brake cylinder to cause] an emergency brake application, said emergency valve device comprising:

(a) a quick service volume chamber,

(b) a continual quick service valve device operable jointly by the pressure in the quick action chamber and in the brake pipe in response to a continuing reduction of the pressure in the brake pipe at a service rate to effect repeated successive release of fluid under pressure from said quick service volume chamber to atmosphere and thereafter recharge of said quick service volume chamber from the brake pipe to the reduced pressure present in the brake pipe,

(c) restricted means enabling flow of fluid under pressure from the brake pipe to the quick action chamber to provide for charging the quick action chamber from the brake pipe to the pressure in the brake pipe, and



(d) fluid-pressure-operated means operably responsive to the release of fluid under pressure from the brake pipe to atmosphere to so cooperate with said continual quick service valve device and said restricted means as to cause the release of fluid under pressure from the quick action chamber to atmosphere at a rate in excess of said service rate, whereby said continual quick service valve device is rendered sequentially operative to terminate the release of fluid under pressure from said quick service volume chamber to atmosphere and thereafter effect recharging of said quick service volume chamber from the brake pipe to the reduced pressure in the brake pipe, and said fluid-pressure-operated means is rendered sequentially operative in conjunction with said continual quick service valve device to terminate the release of fluid under pressure from the quick action chamber to atmosphere at said rate that is in excess of said service rate to enable the flow of fluid under pressure from the brake pipe to the quick action chamber until the pressure in the quick action chamber is the same as that in the brake pipe.

Re. 31,060

ARTICLE HANDLING APPARATUS

David W. Lutz, Carlisle, Pa., assignor to Automatic Truckloading Systems, Inc., Carlisle, Pa.

Original No. 4,181,460, dated Jan. 1, 1980, Ser. No. 865,763, Dec. 29, 1977. Application for reissue Apr. 10, 1981, Ser. No. 253,115

Int. Cl.³ B65G *67/08*

U.S. Cl. 414—28 20 Claims

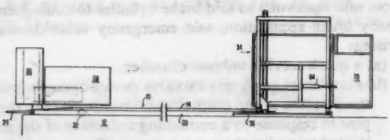
9. Apparatus mounted on a loading dock for loading vehicles, said apparatus comprising:

(a) a conveyor comprising:

(i) an elongated shiftable element mounted on said loading dock for movement in a longitudinal path relative to said loading dock and into a vehicle to be loaded;

(ii) reversible drive means for effecting said movement; and

(iii) first means for restraining a load against longitudinal movement while said shiftable element is retracted from beneath said load and



(b) second means for aligning and/or compacting a load on said shiftable element in the lateral direction prior to loading a vehicle, said second means comprising:

(i) a framework mounted on said loading dock;

(ii) side walls on said framework on opposite sides of said conveyor;

(iii) third means for adjusting the position of said side walls in the lateral direction; and

(iv) fourth means for moving said framework longitudinally from one end of said shiftable element to the other.

Re. 31,061

5-AMINO OR SUBSTITUTED AMINO-7-PHENYL OR SUBSTITUTED PHENYL-2,3-DIHYDRO-1H-1,4-DIAZEPINES

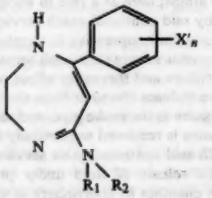
William R. Simpson, Mendham, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Original No. 4,096,140, dated Jun. 20, 1978, Ser. No. 725,440, Sep. 22, 1976. Continuation-in-part of Ser. No. 528,344, Nov. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 456,017, Mar. 29, 1974, Pat. No. 3,929,884. Application for reissue Mar. 27, 1980, Ser. No. 134,444

Int. Cl.³ C07D *243/06;* A61K *31/55*

U.S. Cl. 260—239 BC **32 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, alkyl of 1 to 6 carbon atoms or amino, R_2 is hydrogen or alkyl of 1 to 6 carbon atoms, with the provisos that (1) at least one of R_1 and R_2 is not a tertiary alkyl group and (2) R_2 is hydrogen when R_1 is amino, each X' is independently alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo, or two X's on adjacent carbon atoms together are methylenedioxy, and n is 0, 1, 2 or 3,

or a pharmaceutically acceptable acid addition salt thereof.

Re. 31,062

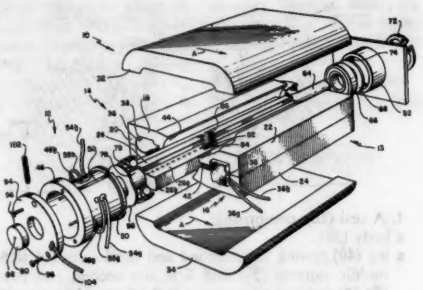
LIMITED-ROTATION MOTOR WITH INTEGRAL DISPLACEMENT TRANSDUCER

Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Original No. 4,189,699, dated Feb. 19, 1980, Ser. No. 906,712, May 17, 1978. Division of Ser. No. 785,912, Apr. 8, 1977, Pat. No. 4,110,879. Application for reissue Sep. 17, 1980, Ser. No. 188,010

Int. Cl.³ H02K *33/00*

U.S. Cl. 335—229 **5 Claims**



1. A limited rotation motor of the type having an array of pole pieces defining a cylindrical passage and an armature rotatively mounted coaxially in the passage and biased toward a reference position, the improvement comprising

A. a bushing *composed of a collar and a body* made of an electrically conductive nonferromagnetic material having an inside diameter that is equal to the diameter of said passage and positioned coaxially with the passage so that the bushing forms an extension of said passage,

B. means defining lengthwise slits in the bushing *body* so as to form at least one pair of tines,

C. means defining a circular cut in the bushing that separates the tines from each other and from the bushing collar so as to electrically isolate the tines, [and]

D. an integral extension on the armature that projects beyond the poles pieces [through] *into* the bushing so that the opposing surfaces of the armature and the tines form an armature displacement transducer *having electrical capacitance* whereby the differential capacitance between the armature surfaces and the tines provides an indication of armature angular displacement[.] *and*

E. means including said collar for rotatively supporting the adjacent end of said armature.

PLANT PATENTS

GRANTED OCTOBER 19, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,896
ALMOND TREE (RENE)

Rene M. Campbell, 3372 S. Burchell Ave., Le Grand, Calif. 95333, assignor to Rene M. Campbell, Le Grand, Calif.

Filed Mar. 2, 1981, Ser. No. 239,342
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, characterized, in comparison to the Carmel, by a more hardy, medium-size tree, whereas the Carmel tree is of small size; by interfertility but blooming with pink rather than white flowers and approximately two days later; and by nuts which are better sealed and hence more insect resistant; and further characterized by a blooming period approximately one day before Mission; by a high percentage of nut set in relation to the quantity of bloom; and by a harvest period substantially concurrent with the Ne Plus Ultra.

4,897
CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 18, 1980, Ser. No. 160,824
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Aristocrat and particularly characterized as to uniqueness, as herein described and illustrated, by the combined characteristics of flat capitulum form; daisy capitulum type; dark yellow ray floret color, with minimum color oxidation; diameter across face of capitulum ranging from 85 to 95 mm. at maturity; uniform eight week photoperiodic flowering response to short days; long peduncle length; medium plant height when grown as a single stem cut spray; and semi-upright branching pattern.

PLANT PATENTS

GRANTED OCTOBER 19, 1926

PATENTS

GRANTED OCT. 19, 1982

ERRATA

For CLASS	See PATENT NO.
374–134	4,354,384
374–162	4,354,385
524–104	4,354,965
549–220	4,354,975
360–014	4,355,332

PATENTS

GRANTED OCT. 19, 1982

ERRATA

PATENTS

GRANTED OCTOBER 19, 1982

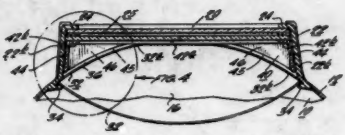
GENERAL AND MECHANICAL

4,354,279

WELDING MASK CORONA BARRIER

Eugene G. Walters, Jr., Orwigsburg, and Heinz E. Ruck, Media, both of Pa., assignors to The Fiber-Metal Products Company, Concordville, Pa.

Filed Jan. 14, 1980, Ser. No. 112,104
Int. Cl.³ A61F *9/06*
U.S. Cl. 2—8 **8 Claims**



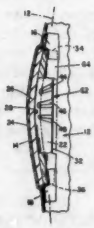
2. A welding mask assembly comprising a shield section, a main frame projecting forwardly from the shield section having a peripheral flange with an opening defining a viewing port, a lens assembly mounted in the main frame and slightly spaced to define a gap, said lens assembly including at least one lens, a corona barrier insert of opaque material seated against a portion of said lens assembly and overlying the peripheral gap between the lens assembly and the main frame to effectively block external light rays which may produce a corona or halo effect interiorly of the welding mask.

4,354,280

JOINT PROTECTOR

John B. Hayes, Walhalla, S.C., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 29, 1980, Ser. No. 220,526
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—16 **5 Claims**



1. A contact sport joint protector for protecting a limb joint, comprising

a unitary, foam-filled, semi-rigid, resilient, molded plastic pad of generally uniform thickness and normally straight configuration

said pad having smooth inner and outer membranes with a thick layer of resilient foam therebetween connected together around the peripheral edge of said pad to form relatively thick side edges providing a generally concave inner surface and a generally convex smooth outer surface

said inner surface and said opposed side edges having a plurality of generally parallel, longitudinally spaced, opposed, hinge grooves extending inwardly from said opposed side edges generally perpendicular thereto with their opposed inner ends spaced from one another

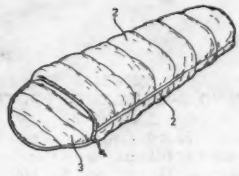
said grooves defining a hinge portion adapted to overlie said limb joint to enable bending of said pad at said hinge portion upon bending of said limb joint.

4,354,281

STRUCTURAL MEMBER FOR SLEEPING BAG

Tomoyoshi Satoh, Tokyo, Japan, assignor to Nihon Yohhin Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 166,686
Claims priority, application Japan, Jul. 4, 1979, 54/91222[U]; Oct. 31, 1979, 54/150085[U]
Int. Cl.³ A41D *1/00, 3/00;* A47G *9/08*
U.S. Cl. 2—69.5 **10 Claims**



1. A structural component for a garment or sleeping bag comprising:

(a) a first layer of material;

(b) a second layer of material laterally spaced from said first layer;

(c) a layer of a first heat insulating material disposed between said first and second layers and having one surface, substantially adjacent the inner surface of said first layer and another surface laterally spaced from the inner surface of said second layer;

(d) a plurality of partition sheets extending between said another surface of said heat insulating layer and the inner surface of said second layer and terminating at said another surface, so as to form a plurality of transversely extending compartments between said another surface of said heat insulating layer and the inner surface of said second layer; and

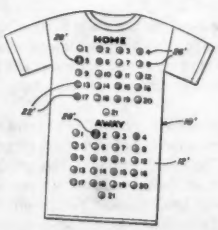
(e) said compartments being filled with a second heat insulating material.

4,354,282

GARMENT WITH SCORE INDICIA AND ATTACHABLE SCORE RECORDING MARKERS

Joel A. Langdon, Elizabethtown, Pa., assignor to Joseph F. Monahan, Jr.; Ben B. Ellis, Sr., both of Lancaster and Grace M. Nace, Columbia, all of, Pa.

Filed Mar. 12, 1981, Ser. No. 242,847
Int. Cl.³ A41B *1/00*
U.S. Cl. 2—115 **7 Claims**



1. A game score indicating garment to be worn on a body torso while playing an active sport game, said garment including a front panel for overlying the chest area of a person wear-

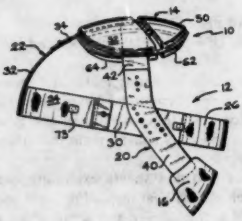
ing said garment, said front panel including predetermined first distinctive color areas thereon with associated indicia indicating the score values of successive scores of a predetermined sport game, and a second distinctive color marker selectively registrable over said color areas, said color areas and said market including coacting means operative to repeatedly removably support said marker on selected areas for indicating the last scored game point.

4,354,283

HEADBAND ASSEMBLY FOR PROTECTIVE HEADGEAR

Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 15, 1980, Ser. No. 216,245
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—413 **12 Claims**



1. An energy-absorbing headband assembly to be worn between protective headgear and a wearer's head comprising:

a flexible headband having a front portion positionable upon the wearer's forehead, a rear portion positionable upon the occiput of the wearer, and right and left side portions connecting said front and rear portions so as to contact the wearer's head and complete a perimeter about the wearer's head;

a multichambered fluid-filled vertex pad positionable upon the crown of the wearer's head forming a yieldable and resilient cushion thereon;

a flexible front support band connecting said vertex pad to said headband front portion so as to locate the vertex pad above and behind the headband front portion;

a resilient and yieldable nape pad positionable upon the wearer's nape and conformable to the lower part of the wearer's head;

a right nape band having ends fixed to said vertex pad and said nape pad and having an intermediate portion fixed to said headband right side portion at the intersection of said right side nape band and said headband right side portion; and

a left nape band having ends fixed to said vertex pad and said nape pad and having an intermediate portion fixed to said headband left side portion at the intersection of said left nape band and said headband left side portion;

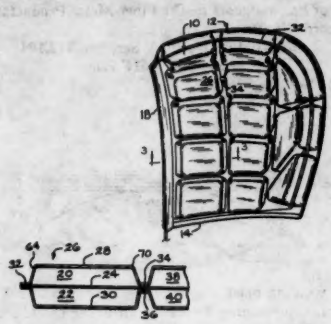
said headband, front support band, right nape band, and left nape band coacting with said vertex pad and said nape pad so as to apply clamping pressure between the crown of the wearer's head and the wearer's nape for securing the headband assembly in place and for absorbing and distributing forces within the headband assembly.

4,354,284

PROTECTIVE LINER FOR OUTDOOR HEADGEAR

Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Jan. 28, 1981, Ser. No. 229,306
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—413 **6 Claims**



1. An energy-absorbing protective liner for use in conventional outdoor headgear, said liner comprising:

a plurality of resilient wall members secured together in a surface-to-surface relation so as to form a plurality of fluid-filled chambers having walls of resilient material confining the fluid within said chambers, said fluid-filled chambers being formed in pairs positionable concentrically about the wearer's head, each of said pairs including an inner fluid-filled chamber adjacent the wearer's head and an outer fluid-filled chamber to be positioned adjacent the outdoor headgear, one of said wall members dividing said inner fluid-filled chamber and said outer fluid-filled chamber and forming a common wall therebetween, each of said inner and outer chambers being positioned side-by-side with a similar chamber and being in fluid communication therewith through a fluid carrying passage, said liner being mountable against the inside of said outdoor headgear such that when the headgear is worn said liner is between said headgear and the wearer's head so that said liner will cushion and disperse impact blows directed to the wearer's head through the outdoor headgear and absorb impact forces applied to said headgear and thereby diminish the magnitude of those forces on the head of the wearer.

4,354,285

FACE SHIELD AND HELMET

Thomas H. Rudd, Wayzata, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.

Filed Oct. 6, 1980, Ser. No. 194,004
Int. Cl.³ A61F *9/04*; A42B *3/02*
U.S. Cl. 2—424 **14 Claims**

13. A face shield unit comprising:

(a) a helmet,

(b) an attachment band curved to substantially the same shape as the front of said helmet,

(c) pivotal fasteners on each end of said attachment band for detachably receiving a face shield whereby said face shield may be quickly and easily replaced,

(d) connections on said attachment band for attaching said attachment band to said helmet,

(e) a face shield pivotally and detachably connected to said attachment band pivotal fasteners thereby pivotally mounting said face shield on said helmet, whereby said face shield may be moved upwardly and outwardly about said attachment band pivots away from the face of the user without removing said helmet, and

(f) a V-shaped groove having an included angle less than 90° extending upwardly and rearwardly about said face shield

from a point adjacent the bottom of the front of said face shield.

4,354,286

ARTIFICIAL EYE LENS

Mikhail M. Krasnov, ulitsa Udaltsova, 24, kv. 66, and Nikolai N. Pivovarov, ulitsa Nezhinskaya, 15, korpus 3, kv. 87, both of Moscow, U.S.S.R.

Filed Oct. 6, 1981, Ser. No. 309,045
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 2 Claims

1. An artificial eye lens adapted for being implanted in the posterior chamber of a patient's eye, comprising an optical lens proper and a supporting element made of an elastic material, said supporting element being made up of two components, viz., a first and a second, of which the first component is essentially an arc-shaped loop fixed with its ends in the lens lateral surface and situated in front of the lens surface over a length equal to at least half the length of the lens circumference at a distance from the lens surface corresponding to the thickness of the iris, while the second component is made as a U-shaped leg arranged oppositely to the middle portion of said arc-shaped loop and fixed with its ends in the lens lateral surface; both of the abovesaid components being so inclined as to contact each other prior to implanting the lens in the posterior chamber.

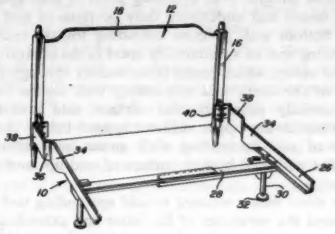
4,354,287

BED FRAME WITH ADJUSTABLE HEADBOARD ENGAGER OR ENGAGER-EXTENDER

Harry Fredman, 908 S. Washington St., Peoria, Ill.

Filed Jul. 11, 1980, Ser. No. 167,526
Int. Cl.³ A47C 19/04
U.S. Cl. 5—185 14 Claims

1. In combination, a bed frame including a pair of generally parallel side rails having laterally extending end plates oriented generally perpendicular to the side rails, and an engager mounted on each of the end plates, each engager being in the form of a substantially flat hook plate having a pair of vertically spaced hooks on one vertical edge thereof and a vertically disposed slot spaced from the hooks, said vertical slot adapted to slidably receive the end plate on the side rails to enable lateral adjustment of the hook plate in relation to the



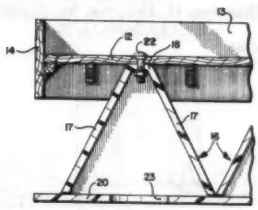
end plate to align the hooks on the hook plate with slots and transverse pins provided on a headboard thereby enabling the headboard to be connected to the bed frame.

4,354,288

BED FRAME WITH PYRAMID SHAPED PLATFORM SUPPORTS

Joseph W. Dennis, 4054 Little Richmond Rd., Dayton, Ohio 45427

Filed Oct. 3, 1980, Ser. No. 193,676
Int. Cl.³ A47C 19/00
U.S. Cl. 5—400 3 Claims



1. A bed comprising a generally horizontally oriented platform,

a plurality of underlying rigid pyramids, each of substantially the same height, having their bases arranged in contiguous manner and have apices lying in a common plane,

means attaching said platform to said apices, and

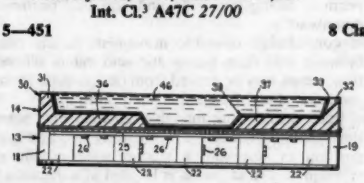
means in said bases defining an aperture for access to said attaching means.

4,354,289

WATERBED

Carl H. Richards, III, East Grand Rapids, and Bruce H. Richards, Walker, both of Mich., assignors to Richards Quality Bedding Company, Inc., Grand Rapids, Mich.

Filed Apr. 11, 1980, Ser. No. 139,608
Int. Cl.³ A47C 27/00
U.S. Cl. 5—451 8 Claims



6. A waterbed comprising:

a rigid support having a substantially planar upper surface;

a semi-rigid shell formed by upstanding unitary wall means closing the perimeter of a cavity and a pair of bottom wall portions integral with opposing parts of said upstanding wall means and underlying only portions of said cavity, said bottom wall portions extending toward each other but being spaced substantially apart in the central portion of the cavity which opens downwardly through the bottom of the shell, said upstanding wall means having a substantially planar bottom surface, said bottom wall portions having upper surfaces spaced below the upper edge of said upstanding wall means and substantially parallel with said bottom surface of said upstanding wall means;

flexible sheet means secured to said upstanding wall means adjacent the perimeter of the latter and extending therefrom completely under said central portion of said cavity and said bottom wall portions, said flexible sheet means closing the bottom of said central portion of said cavity; and

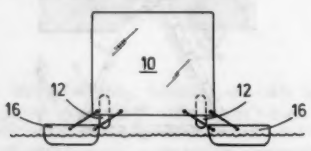
liquid-tight bladder means disposed within said cavity and having a central portion adjacent said flexible sheet means, said bottom wall portion separating remaining portions of said bladder means from said flexible sheet means, said flexible sheet means supporting said shell and bladder means central portion on said rigid support.

4,354,290

CONVERTIBLE HOUSE TRAILER

William B. Tevruchte, R.R. #1, Roseneath, Ontario, Canada, and Julian B. Beecroft, P.O. Box 27, Whitby, Ontario, Canada (L1N 5R7)

Filed Aug. 15, 1979, Ser. No. 66,662
Int. Cl.³ B63C *13/00*
U.S. Cl. 114—344 **4 Claims**



1. A convertible house trailer adapted for use as a house boat, said trailer comprising:

a cabin portion;

road wheels movably mounted on said cabin portion, and having linkage means whereby the same may be raised to a water position and lowered to a road position;

tow bar means connected to said cabin, whereby the same may be towed when on land, and having lower and upper positions;

float means movably mounted beneath said cabin, and having deck portions and hull portions, and movable support means connecting the same to said cabin, said float means being movable between at least a first raised road position, beneath said cabin, with said deck portions facing upwardly and said hull portions facing downwardly, and a lower water position beneath said cabin, with said deck portions facing upwardly and said hull portions facing downwardly;

first controllably operable movement means connecting between said float means and said cabin, whereby said float means may be moved from one position to the other, and located and fastened in such position;

said float means being movable between first, second and third positions which are respectively said first raised road position as aforesaid, a second water-mobile position, wherein said float means is located at a distance beneath said cabin, and a third outwardly spread water-stationary position, wherein said float means is extended outwardly on either side of said cabin, said float means in each of said positions having said deck portions facing upwardly and said hull portions facing downwardly;

said convertible house trailer further including second controllably operable movement means connected beneath said cabin and said road wheels; and

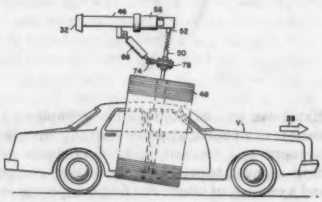
said float means each comprises an elongated hollow seated structure having a generally flat bottom and side walls extending upwardly therefrom, said bottom and said side walls defining said hull portions, and a flat deck extending to said side walls, said float means including a pair of parallel first mounting legs disposed at the front of each of said structures and a second pair of mounting legs at the rear of each of said structures, said first and second mounting legs having lower ends pivotally mounted, at points spaced apart a first distance, to said float structure and upper ends pivotally mounted, at points spaced said first distance, to said cabin and connection means coupling said legs in pairs for movement in unison, whereby said floats may swing relative to said cabin, while remaining in planes parallel to the horizontal plane of said cabin with their decks uppermost, and their hull portions lowermost.

4,354,291

SPRING COUPLED BRUSH ASSEMBLY FOR VEHICLE WASHING APPARATUS

George T. Ennis, Del Mar, Calif., assignor to N/S Car Wash Enterprises, Inc., Inglewood, Calif.

Continuation-in-part of Ser. No. 883,514, May 6, 1978, Pat. No. 4,225,995. This application Jun. 13, 1980, Ser. No. 159,116
Int. Cl.³ B60S *3/06*
U.S. Cl. 15—53 AB **11 Claims**



1. In a vehicle washing apparatus having a support frame, a brush assembly supported by said frame for washing one or more of the front, side and rear of a vehicle moving relative thereto comprising:

brush support means connected to said frame;

a brush for washing the vehicle moving relative thereto;

a shaft for supporting said brush in a normal operating position;

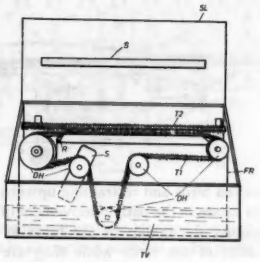
a coupling device for coupling said shaft to said brush support means, said coupling device comprising coil spring means which supports said brush shaft and is responsive to the force of the vehicle against said brush for flexing freely in any direction to tilt said brush, said coil spring means, upon flexing in any direction, further generating a restoring force equal in all directions to urge said brush toward its normal operating position; and

motor means coupled to said shaft for rotating said shaft and said brush in the opposite direction at the surface of the vehicle to the direction of movement of said brush assembly relative to the vehicle to generate a rotary reaction force against the vehicle which walks said brush along the surfaces of the vehicle.

4,354,292
ARRANGEMENT FOR CLEANING CIRCUIT CARDS PARTICULARLY FOR REMOVING SOLDERING AND RESIN REMNANTS

Ake W. Telestad, Skärholmen; Kjell A. Samuelsson, Saltsjö-Boo, and Dick E. A. Storm, Lidingö, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 23, 1980, Ser. No. 162,113
Claims priority, application Sweden, Jul. 11, 1979, 7906039
Int. Cl.³ A46B *13/04*
U.S. Cl. 15—77 **8 Claims**

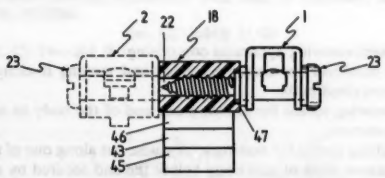


1. Apparatus for cleaning circuit cards to remove solder and resin remnants due to the soldering of components onto the cards, said apparatus comprising container means containing a cleaning liquid, a frame carrying first and second sets of guiding and driving wheels and respective first and second endless cleaning bands on said wheels driven thereby and immersed in said liquid along a portion of the travel thereof, said frame being provided with a guide groove located outside said liquid, said cleaning bands having respective lengths extending in confronting parallel relation in said guide groove and being driven in the same direction by said wheels in said groove, each said band including flexible bristles thereon extending from said band towards the bristles of the other band, said guide groove being outwardly open to permit insertion of a circuit card to be cleaned into said groove, the length of said bristles in relation to the size of said groove being such to cause said bristles of the confronting bands to be pressed against said card and undergo flexing as said bands travel along said card.

4,354,293
ARM TO BLADE CONNECTOR

Robert T. Le Sausse, Brussels, and Johan H. Van den Berg, Hasselt, both of Belgium, assignors to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Jan. 8, 1981, Ser. No. 223,374
Claims priority, application France, Feb. 13, 1980, 80 03157
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **12 Claims**

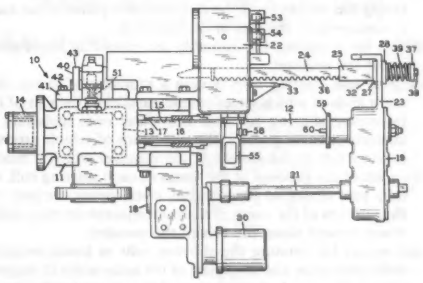


1. A connecting device for attaching one side of a wiper blade to one of two wiper arms of different types (1,2), one type of wiper arm (1) having a width less than the width of the other type of wiper arm (2), wherein the superstructure (12) of the wiper blade compries a first pivot pin (15) onto which is fixedly or releasably secured the body (50) of said connecting device and wherein the free end portion of the two types of wiper arms has substantially the shape of a U of which two flanges (3,7) are provided each with a circular opening (4,8), characterized in that the connecting device comprises a second pivot pin (23) having a first portion which may be threaded from both sides into an opening (22) extending through the body (50) of the connecting device and having a circular enlargement (47) on one side of the body (50) adjacent one of the sides of the superstructure (12), said second pivot pin (23) permitting the attaching of the one type of wiper arm (1) to the one side of the superstructure (12) and the attaching of the other type of wiper arm (2) on either side of said superstructure (12).

4,354,294
ROTARY WALL DESLAGGER

Theodore R. Silver, Erie, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 10, 1980, Ser. No. 185,949
Int. Cl.³ F23J *3/02*
U.S. Cl. 15—317 **14 Claims**



13. A rotary wall deslagger which comprises
(a) a main support structure,
(b) a lance tube rotatably supported by said main support structure for traverse motion between working and non-working positions,
(c) cleaning fluid discharge means associated with said lance tube,
(d) integrated means for moving said lance tube between said working and non-working positions and for activating said cleaning fluid discharge means,
(e) said integrated means including a selectively-operable, mechanical coupling means for mechanically-engaging said integrated means with said lance tube to move said lance tube,
(f) means to release said selectively-operable, mechanical coupling means when said lance tube is in the working position,
(g) said integrated means being operative to activate said cleaning fluid discharge means when said mechanical coupling means is released.

4,354,295

DEVICE FOR AXIAL SHIRRING OF SYNTHETIC TUBULAR MATERIAL FOR FURTHER PROCESSING, ESPECIALLY ON AUTOMATED SAUSAGE STUFFERS

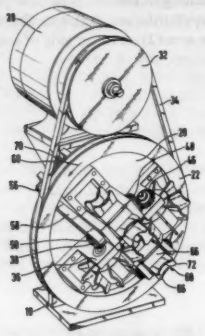
Gunter Kollross, AM Wallerstadter Weg 20, D-6081 Dornheim, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,167

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 2944623

Int. Cl.³ A22C *13/02*

U.S. Cl. 17—1 R 10 Claims



1. A device for axial shirring of synthetic tubular material, such as for use on an automated sausage stuffer, comprising:

an assembly of at least three shirring rolls rotatable about axes, all of which axes are located in a common plane, the shirring rolls being distributed equi-angularly about a central opening adapted to receive a cylindrical mandrel, such that the periphery of the rolls all include a portion facing the mandrel and the said common plane of the axes is transverse to the axis of the mandrel,

means for mounting the assembly for revolving movement about the mandrel,

each of said shirring rolls having a plurality of vanes, the outer ends of which vanes extend parallel to the axis of its respective shirring roll and said outer ends including a concave arcuate groove, the curvature of which groove corresponds to the surface of the mandrel which it faces,

the path of the grooves of the vanes of each shirring roll, as they pass closest to the mandrel, overlapping the path of the grooves of the vanes of the two adjacent shirring rolls, when viewed along the axis of the mandrel,

and means for rotating the shirring rolls in timed relation with each other and at a speed of the same order of magnitude as the speed of revolution of the shirring rolls about the mandrel, and the vanes of each shirring roll being positioned circumferentially about its axis such that upon revolution of the assembly about the mandrel, the vanes of any shirring will directly follow the vanes of the preceeding shirring roll, taken in the direction of revolution and in the direction of advance of the tubular material.

4,354,296

METHOD AND APPARATUS FOR KILLING POULTRY

Ronald D. Robinson, Rte. 3, Box 200A, Gainesville, Ga. 30501

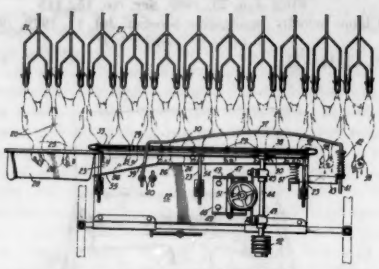
Filed Feb. 20, 1981, Ser. No. 236,587

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—52 18 Claims

1. A method of killing poultry comprising moving birds in succession along a horizontal path with the birds hanging heads downward, guidingly engaging the necks and heads of the birds during such movement and restraining the heads from moving upwardly, simultaneously cammingly engaging the bodies of the birds during such movement and displacing the bodies upwardly relative to the heads and thereby stretching the necks of the birds, and severing the jugular veins of the birds in succession while the necks are stretched.

3. An apparatus for killing stunned fowl by severing the jugular vein with precision and uniformity comprising means to convey birds in succession with their heads hanging downwardly, horizontal guide means engageable with the necks and



heads of conveyed birds and restraining upward movement of the heads, cam means in the path of movement of the conveyed bird and engaging the bodies of the birds in succession to stretch the necks of the birds while they are moving, and means to sever the jugular veins of the birds in succession during their movement and while their necks are stretched.

4,354,297

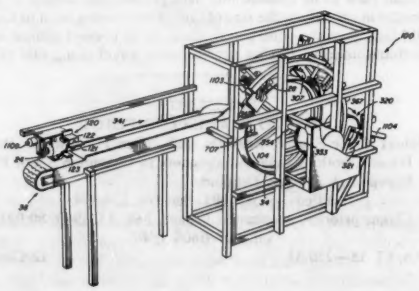
MACHINE FOR PROCESSING FISH

David G. Wilson, Cambridge, Mass.; William B. Hoff, III, Winnetka, Ill., and Roy V. Richard, II, Natick, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 31, 1980, Ser. No. 135,345

Int. Cl.³ A22C *25/17*

U.S. Cl. 17—54 17 Claims



1. Skin removing apparatus comprising:

a. a conveyor for securing a body and moving it along a prescribed path;

b. securing means for securing one end of the body to said conveyor;

c. slitting means for making a crosswise cut along one of the narrow sides of said body below the end secured by the securing means;

d. gripper means, movable in a direction opposite the conveyor, for gripping the skin at the cut made by the slitting means; and in which the conveyor is a rotatable wheel, the body moves in an arc and the gripper means is mounted on a drum which rotates in the opposite direction to the wheel when the gripper has gripped the skin.

4,354,298

PEDAL COUPLING PIN

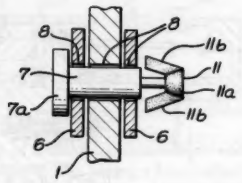
Yoshiyuki Tanaka, and Masaharu Kobori, both of Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha and Kato Hatsujo Kabushiki Kaisha, both of Kanagawa, Japan

Filed Dec. 26, 1979, Ser. No. 106,461

Claims priority, application Japan, Dec. 27, 1978, 53-182410[U]

Int. Cl.³ E05C 13/02; F16B 13/04

U.S. Cl. 24—201 LP 1 Claim



1. A pedal coupling pin to be inserted through coupling pin insertion holes in a coupling member and a pedal for rotatably coupling said coupling member to said pedal comprising:

a pin portion made from metal, said pin portion comprising:

a cylindrical portion;

a flange whose diameter is greater than a diameter of said coupling pin insertion holes formed in the coupling member, said flange being provided on one end of the cylindrical portion;

a small diameter shaft projecting from the other end of said cylindrical portion; and

a circular plate provided on the end of said small diameter shaft; and

an elastic retaining member made from plastic provided on the circular plate, said retaining member comprising a head portion whose diameter is substantially the same as the diameter of said cylindrical portion integrally molded on said circular plate and at least one pair of resilient arms molded integrally with said head portion which extend outwardly toward the flange end and whose free ends extend outwardly a distance greater than the diameter of the coupling pin insertion holes whereby said pedal coupling pin may be installed by inserting it through said coupling pin insertion holes and retained in position only by said flange and said elastic retaining member.

4,354,299

CLAMP FOR FASTENING GRAPEVINES AND OTHER FRUIT-BEARING SHRUBS ON BRACING WIRES

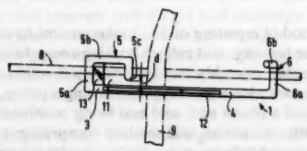
Georg Maidhof, Carlsberg, Fed. Rep. of Germany, assignor to Maidhof GmbH, Carlsberg, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,648

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935986

Int. Cl.³ A44B 21/00

U.S. Cl. 24—261 R 17 Claims



1. A clamp for fastening grapevines and other fruit-bearing shrubs onto a bracing wire, comprising

a pair of angularly connected arms, each of said arms having a free end forming an intermediate piece;

a detent connected at the free end of one of said arms for engagement thereof with the bracing wire;

said detent being in the form of an arc member starting from said one end of said one arm and extending for a predetermined distance in a plane containing said one arm;

the other end of said arc member approaching said one arm but spaced therefrom in said last-mentioned plane a predetermined distance less than the diameter of the bracing wire;

a hook connected at the free end of the other of said arms for engagement thereof with the bracing wire; and,

said intermediate piece being formed from a resilient material with said two arms being angularly spaced from each other with an obtuse angle whose apex is the straight directional lines extension of said two arms.

4,354,300

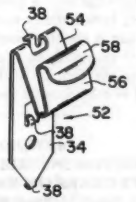
HOLDER FOR SUPPORTING A VALANCE AT A VENETIAN BLIND HEAD

Joseph A. Anderle, Clifton, N.J., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Division of Ser. No. 863,243, Dec. 22, 1977, Pat. No. 4,222,156. This application Jan. 11, 1980, Ser. No. 111,467

Int. Cl.³ A44B 21/00

U.S. Cl. 24—343 1 Claim



1. An article of manufacture for use in connection with a venetian blind, comprising: a body of substantially flat sheet metal having means for supporting at least one valance in a substantially horizontal position, said supporting means comprising three spaced prongs protruding from said body and substantially in vertical alignment with each other, said body also having means for connecting said body to a support, said body comprising a first body portion having a top, said supporting means being connected to said first body portion, said body comprising a second body portion spaced from said first body portion in a direction substantially perpendicular to said first body portion and extending substantially parallel to said first body portion, said second body portion having a top and a bottom and integrally formed thereon at its top means for clamping said body to a venetian blind head, and means for positively holding said first body portion in a substantially vertical plane when connected to said venetian blind head, said holding means forming a third body portion connecting the bottom of said second body portion to the top of said first body portion.

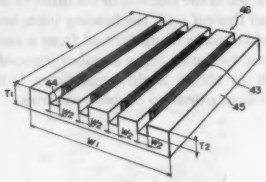
4,354,301
METHOD FOR MANUFACTURING STRIPE-PATTERNED METAL PLATE

Yo Takeuchi, Urawa; Masaki Morikawa, Oomiya; Chuji Tanaka; Toshiharu Hiji, both of Ageo, and Hiroshi Ikeda, Osaka, all of Japan, assignors to Mitsubushi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 75,256, Sep. 13, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 296,153

Int. Cl.³ B23P *13/00*

U.S. Cl. 29—160.6 **12 Claims**



1. A method for manufacturing a stripe-patterned metal plate comprising the steps of:

placing plural kinds of metal sheet blanks having different colors on top of one another to provide a layer structure of said sheet blanks in an alternate order or in a predetermined order of arrangement;

bonding the respective metal sheet blanks to each other directly and metallurigically in a solid state to provide a layer-structured plate;

cutting said layer-structured plate in a direction along a face extending at a predetermined angle to a layer face thereof to provide at least one thin metal plate intermediate;

inserting said metal plate intermediate into an elongated hole of a rectangular cross-section formed longitudinally through an elongated solid package of metal, said metal plate intermediate being substantially equal in cross-section to said hole in said package, said package having substantially the same thermal deformation properties as said layer-structured plate; and

hot rolling said package into a predetermined length with its width remaining substantially unchanged so that said metal plate intermediate is simultaneously extended at a predetermined reduction rate with its width remaining substantially unchanged, the cut fact of said metal plate intermediate being disposed in a horizontal direction.

4,354,302
JACKING TOOL FOR INSTALLING AND REMOVING DRAFT GEARS ON RAILWAY CARS

Roger J. Weseloh, South Holland; Russell G. Brandsma, Hazel Crest, and John R. Hoshour, Country Club Hills, all of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Sep. 22, 1980, Ser. No. 189,248

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—252 **16 Claims**

1. A jacking device for reducing a draft gear to a compressed state prior to installing or removing the draft gear into or from, respectively, a draft pocket formed in a railway car center sill in which the draft gear is operably disposable with one end adjacent an inner end of said pocket for resiliently transmitting buff or draft forces between the coupler and draft gear, said draft gear including a follower axially aligned at the other end thereof opposite said one end, and a yoke surrounding the draft gear and by which the coupler may be connected to the draft gear, said jacking device comprising:

(a) a cylinder having a closed end,

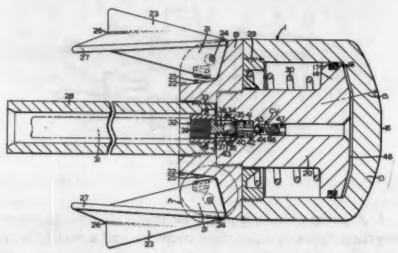
(b) a ram, including a ram head, reciprocably operable within said cylinder, said cylinder and said ram head cooperating to form therebetween a pressure chamber within said cylinder;

(c) a rod portion extending coaxially from the side of said ram head opposite said pressure chamber, said ram head and said rod portion having a bore extending coaxially therethrough with one end opening to said pressure chamber;

(d) a transverse beam member coaxially secured on the end of said rod portion opposite the ram head;

(e) a pair of locking arms each having one end pivotally secured on said transverse beam member on opposite extremities thereof, extending axially away therefrom, and being pivotally biased angularly outwardly therefrom,

(f) said locking arms being so disposed on said transverse



beam and of such length as to be engageable with such yoke when the jacking device is inserted into such draft pocket and being effective, when said pressure chamber is charged with fluid under pressure, for transmitting compression forces to such follower and thereby effecting such compressed state of the draft gear;

(g) conduit means connecting with the other end of said bore opposite its said one end so as to provide passage means via which fluid may be supplied to and pressurized in said pressure chamber; and

(h) checking means for retaining said draft gear in said compressed state during removal or installation thereof.

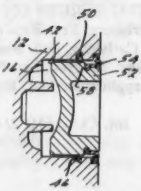
4,354,303
METHOD OF DISC BRAKE REPAIR

Raymond J. Staley, 15990 S. Hampton, Livonia, Mich. 48150

Filed Dec. 15, 1980, Ser. No. 216,679

Int. Cl.³ B23P *7/02*

U.S. Cl. 29—402.08 **7 Claims**



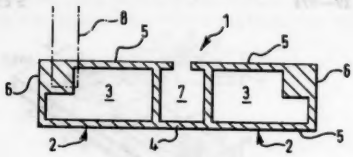
1. A method of repairing of disc brake systems having a disc brake caliper housing, said caliper housing comprising a cylinder, and a piston assembly movably disposed within said caliper housing, said piston assembly comprising a piston, a piston dust boot, and a piston seal, said seal being positioned on and movable with said piston, said method comprising: removing said piston assembly from said cylinder; machining an annular groove in a sidewall of said cylinder; installing a new piston seal in said annular groove; installing a generally cylindrically shaped replacement piston in said cylinder.

4,354,304

METHOD OF MAKING INTUMESCENT SEALS

Bernard Dixon, Pampisford, England, assignor to Dixon International Limited, Cambridge, England

Filed Jan. 22, 1981, Ser. No. 227,230
Claims priority, application United Kingdom, Dec. 4, 1980, 8038921
Int. Cl.³ B22D 11/126
U.S. Cl. 29—527.1 7 Claims



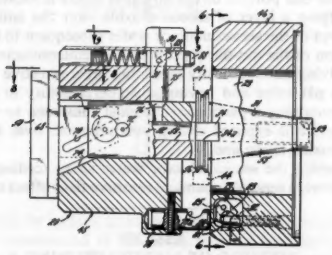
1. A method of making an intumescent seal comprising: providing a tubular holder having a longitudinal bore or interior chamber defined by a thickened longitudinally extending portion of the holder contiguous with a relatively thin wall of the holder; filling the bore of the holder with solid intumescent material; and thereafter removing a longitudinally extending part of said thickened portion thereby to leave part of said thickened portion as a baffle within the holder, the space left by said removed part forming a strait having a longitudinally extending opening to the exterior of the holder and a longitudinally extending opening to the bore of the holder.

4,354,305

CONTOURING AND THREADING ATTACHMENT FOR MULTI-FUNCTION MACHINE TOOLS

Harvey R. Plummer, Fond du Lac, and William E. Keller, Fox Point, both of Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Continuation-in-part of Ser. No. 971,716, Dec. 21, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,545
Int. Cl.³ B23B 3/26; B23Q 3/157
U.S. Cl. 29—568 7 Claims



1. A contouring and threading attachment for use with a numerically controlled multi-function machine tool having an automatic tool changer including a tool exchange arm with a tool gripper, said machine tool also having a spindle sleeve and a spindle mounted therein for rotation bodily therewith and for axial movement with respect thereto, said spindle having a tool engaging socket therein, said attachment comprising, in combination:

(a) an adapter collar mountable rigidly on the spindle sleeve of said machine tool for rotation bodily therewith;

(b) a body having a central axial bore therein and adapted to detachably engage said adapter collar for rotation in unison therewith;

(c) an actuating bar housed telescopically within said central bore of said body and movable axially of said bore;

(d) said actuating bar having an inner end portion, an intermediate portion, and an outer end portion;

(e) said inner end portion of said actuating bar being insertable in the spindle socket for driving connection therewith rotationally and axially;

(f) a transverse flange on said intermediate portion of said actuating bar engageable by the gripper of the tool exchange arm acting between said body and said adapter collar;

(g) a radial tool slide adjustably mounted on the outboard end of said body; and

(h) means defining a motion transmitting connection between said tool slide and said outer end portion of said actuating bar;

(i) means for releasably latching said actuating bar in a fixed position with respect to said attachment body to facilitate storage and transfer of said attachment to and from the spindle by the tool exchange arm; and

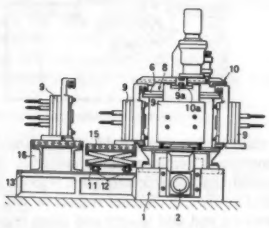
(j) detent means for disengaging said releasable latching means upon engagement of said body with said adapter collar, and for engaging said releasable latching means upon disengagement of said body from said adapter collar.

4,354,306

MACHINE TOOL HAVING REPLACEABLE GANG HEADS

Jinsei Ida, Sayama; Kenzaburo Matsuo; Hiroshi Ejiri, both of Kawagoe, and Takeshi Ishibashi, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,556
Claims priority, application Japan, Nov. 28, 1978, 53/146093
Int. Cl.³ B23Q 3/157
U.S. Cl. 29—568 2 Claims



1. In a gang head machine tool of the type including a base, a slide table mounted on said base for sliding movement longitudinally thereof, a working unit having a driving motor mounted on said slide table, a magazine integral with said working unit storing plural independent gang heads, said magazine including vertically spaced rails encircling said working unit and along which said independent gang heads are moveable, an indexing mechanism for moving said gang heads along said rails to locate a selected gang head in an operative position relative to said working unit, and means for detachably interconnecting said working unit and said selected gang head in operative working relationship;

the improvement comprising the combination with said gang head machine tool of a second magazine independent of and supplemental to said first magazine, said second magazine being positioned adjacent said working unit and including a storage device for gang heads additional to those stored in said first magazine, a runway interposed between said working unit and said second magazine, and a transfer device moveable longitudinally of said runway and operative to remove a selected gang head from said first magazine and transfer said selected gang head to said second magazine, and operative to transfer any selected one of said gang heads from said second magazine to said

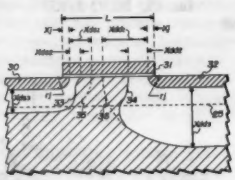
first magazine in substitution for said selected gang head removed from said first magazine, said transfer device including means for uncoupling said selected gang head from said first magazine and coupling a gang head selected from said second magazine to said first magazine without disturbing the positioning of the remainder of said gang heads stored in said first magazine and without disturbing the positioning of the working gang head coupled to said machine, said means comprising a wheeled truck moveable longitudinally of rails comprising said runway, a vertically moveable upper support surface of said truck for the reception of a gang head thereon, means for raising and lowering said upper support surface, and roller means incorporated into said upper support surface facilitating the movement of a gang head laterally onto said upper support surface facilitating the movement of a gang head laterally onto said upper support surface and the removal of the gang head laterally of said upper support surface in a direction transverse to the longitudinal axis and direction of movement of said truck.

4,354,307

METHOD FOR MASS PRODUCING MINIATURE FIELD EFFECT TRANSISTORS IN HIGH DENSITY LSI/VLSI CHIPS

Mark A. Vinson, San Diego; Rakesh Kumar, Escondido; Norman W. Jones, Poway, all of Calif., and Michael R. Gulett, Fort Collins, Colo., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,515
Int. Cl.³ H01L *21/263*
U.S. Cl. 29—571 **18 Claims**



1. A method of forming a field effect transistor of the type which comprises a semiconductor substrate having a major surface, spaced-apart source and drain regions in said substrate adjacent said surface, a channel region in said substrate adjacent said surface and said source and drain regions, and a gate overlying said channel region; wherein said method includes the steps of:

implanting dopant atoms of a first conductivity type into at least said channel region to form a peak density of said first conductivity type dopant atoms at a predetermined depth below said surface of said channel and a substantially lower density of said first conductivity type dopant atoms at said surface of said channel, which peak density reduces reachthrough at said predetermined depth beneath the surface of said channel without adversely increasing the channel's threshold voltage;

implanting dopant atoms of a second conductivity type opposite to said first conductivity type into said source and drain regions to form source and drain junctions with said channel having radii at said surface of less than said predetermined depth, which radii operate to reduce reachthrough at said surface of said channel above said predetermined depth; and

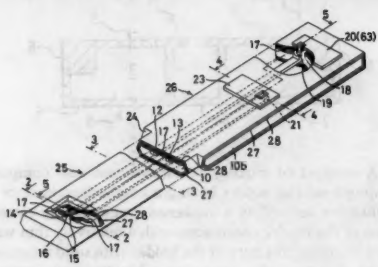
depositing a smooth insulating layer over said gate at subatmospheric pressures and at temperatures that are below the insulating layer's flow point to eliminate the need for a separate reflow step to smooth out said layer, which reflow step would adversely alter the distribution of said implanted dopant atoms.

4,354,308

METHOD FOR MANUFACTURE OF A SELECTIVE CHEMICAL SENSITIVE FET TRANSDUCER

Kiyoo Shimada, Kurashiki; Masayuki Matuo, and Masayoshi Esashi, both of Sendai, all of Japan, assignors to Kuraray Co., Ltd., Okayama and Taoayuki Matsuo, Sendai, both of, Japan

Division of Ser. No. 957,433, Nov. 3, 1978, Pat. No. 4 218,298.
This application Feb. 5, 1980, Ser. No. 118,77[illegible]
Claims priority, application Japan, Nov. 4, 1977, 52-1[illegible]679
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **5 Claims**



1. A method for manufacturing a chemical selective field-effect transistor device, which comprises the steps of:

forming spaced apart diffusion layers on one surface of a semiconductor wafer made of silicon, said diffusion layers having a predetermined doping polarity opposite to that of the semiconductor wafer;

forming electroconductive channel stopper layers, one for each two of said diffusion layers, between the adjacent two of the diffusion layers except for one end portion of said diffusion layers and on said one surface of the semiconductor wafer, for avoiding formation of an electroconductive channel between said adjacent two of the diffusion layers, said channel stopper layer having a doping polarity opposite to that of the diffusion layers;

forming a cut-out portion in the semiconductor wafer so as to leave a substantially comb-shaped arrangement of elongated bodies of the semiconductor wafer in which said one end portion of the diffusion layers is located;

applying a layer of silicon dioxide over the entire surface area of the semiconductor wafer subsequent to the formation of the cut-out portion in the semiconductor wafer;

applying an electrically insulating layer sensitive to change in pH value and having an impermeability to a solution containing a particular chemical substance to which the device is exposed during measurement, over the silicon dioxide layer; and

trimming the semiconductor wafer along scribing lines, to provide separate chemical sensitive field-effect transistors.

4,354,309

METHOD OF MANUFACTURING A METAL-INSULATOR-SEMICONDUCTOR DEVICE UTILIZING A GRADED DEPOSITION OF POLYCRYSTALLINE SILICON

James R. Gardiner, Wappingers Falls; William A. Pliskin; Martin Revitz, both of Poughkeepsie, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 974,577, Dec. 29, 1978, Pat. No. 4,249,968.
This application Sep. 12, 1980, Ser. No. 187,036
Int. Cl.³ H01L *21/20, 21/225*
U.S. Cl. 29—571 **6 Claims**

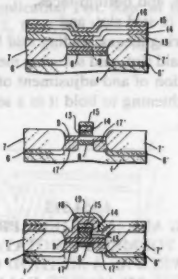
4. A method of making a metal-oxide-semiconductor device comprising the steps of:

providing a planar silicon body,

forming a thin insulating layer on a surface of said body,

depositing polycrystalline silicon onto said insulating layer to form a gate,

said polycrystalline silicon being deposited with a substantially intrinsic portion adjacent said insulating layer and



having a dopant concentration increasing in the direction away from said insulating layer,

diffusing said dopant into the said intrinsic portion of said polycrystalline silicon, and

depositing a metal contact onto said gate.

4,354,310

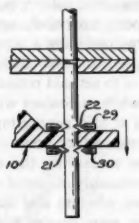
METHOD OF MAKING INDUCTANCE

Richard L. Hatton, 558 Eton Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 22,808, Mar. 22, 1979, abandoned. This application May 13, 1980, Ser. No. 149,315

Int. Cl.³ H01F *41/06;* H01R *43/00*

U.S. Cl. 29—605 **6 Claims**



1. A method for making an inductance comprising providing a coil form constructed of insulating material and having at least one passage extending therethrough for the receipt of a wire terminal,

positioning a terminal-providing wire in said passage with portions of the lead extending beyond the ends of said passage on both sides of the passage, said wire being continuous and of indefinite length,

supporting said wire a spaced distance from one of said passage ends,

notching the supported wire in portions adjacent said form to immobilize said wire relative to said form,

severing the supported wire to provide said terminal prior to removal of the support;

removing the support from said wire wherebya terminal-equipped coil form is provided; and winding another wire onto said coil form to provide an inductance.

4,354,311

SOLDERABLE CONDUCTOR COMPOSITION AND A METHOD OF SOLDERING A LEAD TO A LEAD PAD

Donald Neuhoff, Colorado Springs, Colo.; Arthur H. Mones, Minneapolis, Minn., and Kit M. Lam, Peoria, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 942,728, Sep. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,226, Dec. 16, 1977, abandoned. This application Jun. 23, 1980, Ser. No. 161,724

Int. Cl.³ H05K *3/34;* H01B *1/02*

U.S. Cl. 29—840 **3 Claims**

1. A conductor composition comprising:

finely divided gold particles and finely divided inorganic binder particles dispersed in an inert liquid vehicle having by weight 98.2 to 98.7 gold particles and, complementally, 1.8 to 1.3% inorganic binder particles, the binder consisting essentially of by total weight of gold and binder,

0.35 to 0,24 percent PbF_2,

0.34 to 0.23 percent CdO,

0.68 to 0.39 percent Cu_2O, and the balance glass.

2. The method of soldering a lead to a lead pad on a substrate comprising the steps of: printing a conductor pattern including at least one lead pad on the substrate using a gold composition, said gold composition being composed of finely divided gold particles and finely divided inorganic binder particles dispersed in an inert liquid vehicle, by weight 98.2 to 98.7% gold particles and complementally 1.8 to 1.3% inorganic binder particles, the binder consisting essentially by total weight of gold and binder of:

0.68 to 0.39 percent Cu_2O

0.35 to 0.24 percent PbF_2 l

0.34 to 0.23 percent CdO and the balance

glass:

allowing the print to level at room temperature: heating the substrate to a temperature substantially not exceeding 130° C. until substantially dry;

firing the substrate to sinter the inorganic materials;

vapor degreasing the fired substrate;

applying a solder flux to the lead pad;

placing a solder preform on the lead pad;

heating the substrate to allow the solder on the lead pad to liquify:

cooling the substrate to solidify the solder;

presoldering a lead;

cleaning flux off of the lead;

applying solder flux to the solder on the lead pad;

heating the substrate to a temperature at which the solder begins to reflow:

placing the presoldered wire on the lead pad;

maintaining the solder in a liquid state for a predetermined period of time:

cooling the substrate to ambient temperature, and

cleaning the substrate and the lead soldered to the lead pad.

4,354,312

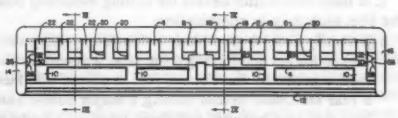
SHAVING IMPLEMENT, HOUSING THEREFOR, AND RAZOR

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 6, 1980, Ser. No. 194,551

Int. Cl.³ B26B *21/14*

U.S. Cl. 30—47 **8 Claims**



1. A shaving implement housing comprising a platform

portion, a back portion upstanding from a lengthwise margin of said platform portion, a cap portion extending from said back portion and overlying said platform portion, leg portions extending forwardly from said platform portion and joining a guard portion, said platform portion having a series of aligned recesses therein adjacent said back portion, and said cap portion comprising a series of spaced, aligned, forwardly extending fingers, each of said fingers being disposed over one of said recesses, said recesses being separated by platform rib portions, said rib portions and said fingers being adapted to receive and retain blade means therebetween.

4,354,313

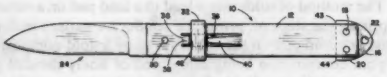
SLIDE LOCK FOLDING BLADE KNIFE

Woodrow W. Naifeh, Rte. 13, Box 380, Tulsa, Okla. 74107

Filed Dec. 11, 1980, Ser. No. 215,241

Int. Cl.³ B26B *1/04*

U.S. Cl. 30—161 **9 Claims**



1. A slide lock knife comprising a pair of shaped elongated handle plates, an elongated blade, a pivot pin pivotally connecting the blade between the handle plates, a sleeve member slidably carried by the handle plates, said sleeve member having a first position adjacent to the blade pivot pin and engageable with the blade for holding the blade in either a fully open or a fully closed position, and a second opposite retracted position clear of the blade for opening or closing the blade and locking means for selectively locking the sleeve member in the first position.

4,354,314

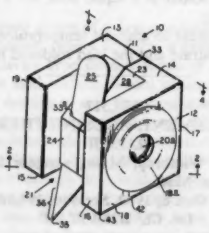
HAND-HELD CUTTER AND BLADE HOLDER FOR CUTTING MOUNTING BOARD AND THE LIKE

Donald C. Pierce, 1253 C. Redwood Blvd., Novato, Calif. 94947

Continuation-in-part of Ser. No. 55,345, Jul. 6, 1979, Pat. No. 4,262,419, which is a continuation-in-part of Ser. No. 22,423, Mar. 21, 1979, abandoned. This application Aug. 19, 1980, Ser. No. 179,559

Int. Cl.³ B26B *29/00*

U.S. Cl. 30—293 **8 Claims**



1. A hand-held cutter device for cutting mounting board and the like, including in combination:

a generally cube-shaped blade holder comprising two interlocked halves and having a top face, a generally flat front face, a generally flat bottom face, a pair of side faces, and a rear face, said holder having a major recess extending into said top, bottom, and front faces to a body portion extending between the sides of said cube and integral with said rear face, said halves having facing surfaces that nearly meet and extend along planes approximately midway between and generally parallel to said side faces,

at least one blade-receiving slot in said body, split between said two halves and lying along a plane perpendicular to the plane of the side faces of the holder and at an angle to the top, front, and bottom faces,

a cutting blade in said slot, and

adjustable securing means holding said halves together with the blade in said slot, said securing means enabling loosening for insertion of and adjustment of the position of said blade and tightening to hold it in a selected said position.

4,354,315

MEASURING ARRANGEMENT PROVIDED AT A ROLLER WAY FORMED BY ROTATABLY MOUNTED ROLLERS AS WELL AS A METHOD OF EVALUATING THE MEASURED VALUES

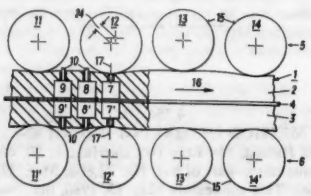
Hans Hecht, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 8, 1980, Ser. No. 214,130

Claims priority, application Austria, Jan. 25, 1980, 414/80

Int. Cl.³ G01B *7/14, 7/31*

U.S. Cl. 33—182 **8 Claims**



1. In a measuring arrangement provided at a roller way formed by rotatably mounted rollers, in particular at a continuous casting plant having oppositely arranged strand guiding rollers, and of the type including a supporting body having a neutral line and adapted to move along said roller way in a moving direction so as to set said rotatably mounted rollers in continuous rotation while in contact with said movable body, and sensors arranged at said supporting body, said rotatably mounted rollers having surface areas coacting with said sensors and said sensors measuring the distance between said surface areas of said rotatably mounted rollers and said neutral line, the improvement wherein said supporting body, on its side facing said roller way, carries at least three sensors arranged at a distance from one another in the direction parallel to said moving direction of said supporting body, said sensors measuring each of said surface areas of said rotatably mounted rollers in subsequent angular positions.

4,354,316

METHOD OF BENEFICIATING WOOD

Herbert A. Schroeder, 3000 W. Lake St., Fort Collins, Colo. 80521

Filed Aug. 24, 1981, Ser. No. 295,366

Int. Cl.³ F26B *7/00, 5/04, 3/00*

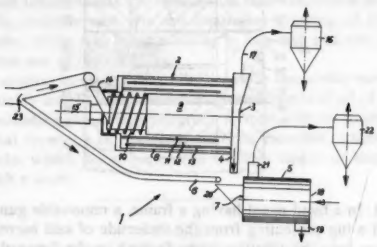
U.S. Cl. 34—13.8 **21 Claims**

1. A method of beneficiating wood, comprising contacting wood with an agent capable of forming a borate ester linkage between hydroxyl groups of the cell wall constituents of the wood, and thereafter contacting the wood with an aldehyde.

4,354,317
PROCESS OF POURABLE MATERIALS

Paul Mathis, Merdingen, and Max Zimmer, Efringen-Kirchen, both of Fed. Rep. of Germany, assignors to Mathis System-Technik GmbH, Merdingen b.Freiburg, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,593
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942633; Apr. 5, 1980, 3013307
Int. Cl.³ F26B *3/02*
U.S. Cl. 34—33 20 Claims

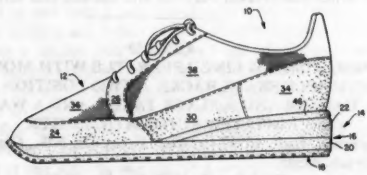


1. A method of drying a quantity of pourable material, particularly moist sand, comprising the steps of splitting the overall quantity into a first portion and a second portion; thermally drying the first portion; splitting the thermally dried first portion into two fractions; adding one of said fractions to the second still moist portion and agitating them to form a mixture; thereafter adding said mixture to the other of said fractions whereby the two portions become mixed together; and further comprising the steps of sensing the moisture of the material prior to, during and/or after the step of drying; and adjusting the quantity ratio of said first and second portions relative to one another as a function of the measured moisture.

4,354,318
ATHLETIC SHOE WITH HEEL STABILIZER

Edward C. Frederick, Missoula, Mont.; Joseph J. Murphy, Biddeford, Me.; James T. Gorman, and Steven J. Burris, both of Exeter, N.H., assignors to BRS, Inc., Beaverton, Oreg.

Filed Aug. 20, 1980, Ser. No. 179,822
Int. Cl.³ A43B *13/12, 23/08*
U.S. Cl. 36—30 R 17 Claims



1. An athletic shoe comprising:

a shoe upper having an outer surface and an inner surface, said shoe upper including a heel spring section and a toe spring section;

a sole secured to said upper, said sole including an outer sole layer with an upper major surface and a lower major surface, an external portion of the upper major surface of said outer sole layer extending, at least one said heel spring section, beyond the area where said sole is secured to said upper;

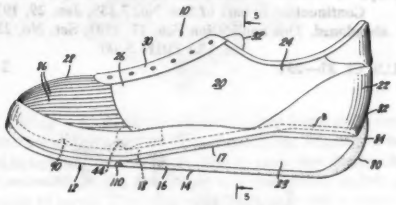
said upper including a heel counter supported in said heel section; and

a bead for enhancing heel stability secured between the outer surface of said upper and said external portion of said outer sole area, said bead extending around only the perimeter of said heel spring section and having a generally wedge-shaped cross-section with an upwardly facing surface terminating at an inner edge a short distance inward of the outer perimeter of the upper major surface of said sole and forming the only contact surface of said bead with said upper, the bead forming a resilient support body for said counter along the area of maximum stress on said counter during running.

4,354,319
ATHLETIC SHOE

Barry H. Block, 25 Fifth Ave., New York, N.Y. 10003, and Stanley Beekman, 26670 Loganberry Dr., Richmond Heights, Ohio 44143

Division of Ser. No. 29,038, Apr. 11, 1979, Pat. No. 4,262,435. This application Dec. 19, 1980, Ser. No. 218,217
Int. Cl.³ A43B *5/00, 23/00*
U.S. Cl. 36—114 3 Claims



1. An athletic shoe comprising:

an elongated solepiece having a ground engaging bottom surface, and an upper surface on which the wearer's foot is received, and

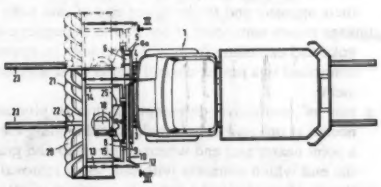
an upper piece secured to said solepiece, said upper piece providing a close encircling foot enclosure extending from a counter section at the rear of the foot to a toe box section at the front,

said upper piece toe box section being provided with pleats rendering said toe box section expansible when the remainder of said upper piece is flexed relative to said toe box section.

4,354,320
SNOW PLOW FOR RAILED VEHICLE

Alfred Schmidt, Friedrichstrasse 17, D-7822 St. Blasien, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,408
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947396
Int. Cl.³ E01H *8/06*
U.S. Cl. 37—213 4 Claims



1. Apparatus for attachment to a rail vehicle for plowing snow along the right of way comprising an elongated housing extending the width of the rail vehicle having plow means mounted therein, said plow means comprising a pair of rotatable helical snow plows mounted side by side on a common axis and having transmission means comprising a common drive connection to each plow, attachment means for securing

said housing to said rail vehicle, comprising a first support and guide member attached to the front end of said rail vehicle and extending substantially across the width thereof, and a second support and guide member articulatingly secured to said housing for pivotal movement with respect to the ground, means to enable said plow means to clear a path for said rail vehicle in a single pass consisting of means to permit movement of said plow means from side to side transversely of said rail vehicle, said last named means including mounting said first and second support and guide members for cooperable slidable interengagement across the width of said first member whereby said second member and the housing secured thereto are movable from side to side across the width of said rail vehicle to carry said plows from side to side.

4,354,321

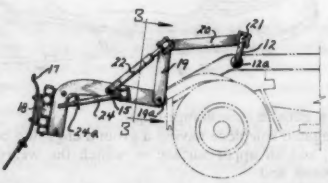
SNOW ATTACHMENT FOR A ROAD GRADER

Floyd V. Weatherholt, Rte. 3, Box 34A, Rockport, Ind. 47635

Continuation-in-part of Ser. No. 7,255, Jan. 29, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,178

Int. Cl.³ E01H *5/00*

U.S. Cl. 37—231 **2 Claims**



1. A simple snow removal blade and snow blade assembly for attachment to a road grading equipment and to its lifting and lowering controls for converting said grading equipment to a snow removal device which comprises:

a snow removal blade, having a front side and a backside;

angling members pivotably secured at one end to the back side of said snow removal blade at its center linearly;

pivot means securing said one end of said angling members to the back side of said snow removal blade;

means for connecting said angling members to the front end of said road grading equipment;

yoke means extending upwardly with its lower ends pivotably connected to said means for connecting said angling members to said road grader;

non-extendable members connected at one end to said angling members at a point between said snow removal blade and said means for connecting said angling members to said grading equipment and pivotably connected at their opposite end to the upper end of said yoke means;

linkage means connected at one end to the upper end of said yoke and extending from said yoke with its opposite ends connected to a power control means on said grader equipment;

a pair of mechanical telescopic members pivotably connected at one end to one each of said angling members at a point nearer said end which connects to said grader than the end which connects with said snow removal blade;

said pair of mechanical telescopic members pivotably connecting at their other end to the back side of said snow removal blade at a point equidistant from said pivot means to which said angling members are pivotable secured;

whereby said angling members and said yoke can be secured to the front end of said grader equipment thereby securing said snow removal blade for removing snow and said linkage means are connected to the power means for raising and lowering said snow removal blade.

4,354,322

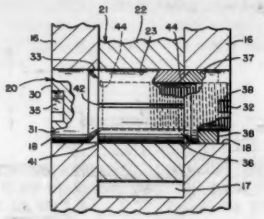
HAND GUN WITH IMPROVED BARREL MOUNTING PIN

Robert A. Carone, R.D. No. 1, Dansville, N.Y. 14437

Filed Sep. 15, 1980, Ser. No. 187,504

Int. Cl.³ F41C *23/00*; E16B *13/06*

U.S. Cl. 42—75 D **10 Claims**



1. In a hand pistol having a frame, a removable gun barrel, and a lug projecting from the underside of said barrel into a space between two furcations formed on the forward end of said frame, improved means for pivotally connecting said lug to said furcations to allow pivotal movement of said barrel on said frame between loading and firing positions, respectively, comprising

a screw having a cylindrical head removably positioned coaxially in a circular bore in one of said furcations and having an integral, reduced-diameter, externally-threaded shank projecting coaxially through a registering bore in said lug and coaxially into a circular bore formed in the other of said furcations,

an annular, internally-threaded nut adjustably threaded onto said shank of said screw and disposed coaxially and removably in said bore in said other furcation, and

radially expansible means removably mounted in said bore in said lug, and surrounding said shank between said nut and the cylindrical screw head to be compressed therebetween when said nut is threaded onto said shank toward said screw head,

said radially expansible means having thereon at least two bearing surfaces which are inclined to the axis of said screw shank, and each of which is slidable at least in part in a direction radially of said axis relative to a complimentarily-shaped bearing surface with which it is engaged, when compressed between said nut and said screw head.

4,354,323

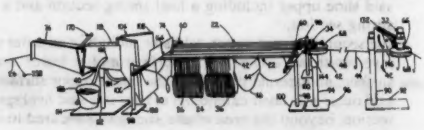
LONG FISHING LINE APPARATUS WITH MOVABLE MULTIPLE SKATE RACKS, A TWO POSITION MAIN HAULER AND A SLACK TAKER, AND A WATER AGITATED AUTOMATIC BAITER

Warren P. Huff, 15717 Crescent Valley Dr. NW., Gig Harbor, Wash. 98335

Filed Dec. 3, 1979, Ser. No. 99,606

Int. Cl.³ A01K *79/00*, *11/06*

U.S. Cl. 43—4 **22 Claims**



1. A long fishing line apparatus, comprising:

(a) movable, multiple, racks, slidably and removably received on supports, capable of being arranged parallel to one another, and adaptable to support a skate, by having a longitudinal receiver, an upstanding planar bar integrally

formed with the longitudinal receiver, serving to create one side of a near top opening of the longitudinal receiver, serving also as a vertical guide during placement of fishing hooks along a rack, and formed with end cutout structues to slide over a support, with fishing hooks of various sizes, both planar and offset, being rotated, then their also rotated barb ends are lowered through the top opening and into the interior of the longitudinal receiver, and then afterwards, upon counter rotation of the barb ends, and also consequently counter rotation of the fishing hooks, these fishing hooks are retained on their respective movable, multiple rack, via this restrictive gripping of their barbs, while also being slidable in one end and out the other end of the rack; and

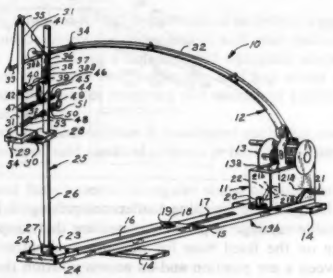
(b) a support having two parallel beams to removably and to slidably interfit with the end cutout structures of all of the upstanding planar bars integrally formed with the longitudinal receivers to create the various movable, multiple, racks, which are so supported whether empty or loaded with a skate.

4,354,324

FISHING ROD HOLDING DEVICE

James H. Eblen, 1150 W. Panhandle St., Slaton, Tex. 79364

Filed Dec. 8, 1980, Ser. No. 214,276
Int. Cl.³ A01K *91/06*
U.S. Cl. 43—15 **2 Claims**



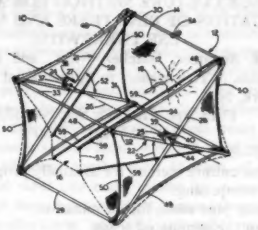
1. A fishing rod holding device, comprising, in combination, a base, a box secured to said base for removably receiving the butt end of said fishing rod, a post removably secured to said base, for holding said fishing rod in a flexed condition, said post including a hinged arm with a seer pin receiving member, which engages a seer pin of said post secured to said base, and said seer pin serves as a means of engaging and retaining the forward end portion of said fishing rod in flexed condition, until a fish strikes the fishing line of said fishing rod, and a block is fixedly secured to said post and is hinged by a hinge secured at one side, to one side of a second block fixedly secured to one end of said hinged arm, and a seer pin receiving tube is fixedly secured to said post and includes an elongated slot in its wall, for freely and slideably receiving said seer pin, and an arm integrally attached to one end of said seer pin projects from the elongated slot and is removably received in said seer pin receiving member, which is flared at its projecting end which receives said arm, and its opposite end is fixedly secured in said hinged arm by suitable means, and a second arm which is integrally attached to said seer pin, and is angularly disposed at the opposite end of said seer pin, engages over said fishing rod near its front tip, and said arm, extending from the elongated slot of said seer pin receiving tube, is held downwards in said seer pin receiving tube by a coil spring, which is received on said seer pin arm at one end, and the opposite end of said spring is received on a bolt transversely received through said post secured to said base, and when said device is set, said fishing rod is placed by the user in a fork member secured fixedly in the top end of said hinged arm.

4,354,325

FOLDING MARINE TRAP

Sakari Aho, Port Coquitlam, Canada, assignor to SAK Industries (1980) Ltd., Port Coquitlam, Canada

Continuation of Ser. No. 108,656, Dec. 31, 1979, abandoned.
This application Aug. 12, 1981, Ser. No. 292,152
Int. Cl.³ A01K *69/10*
U.S. Cl. 43—105 **13 Claims**



1. A folding trap characterized by a folding frame and a net, the frame being fitted within the net and being adapted to be erected to support the net and to form an enclosure therewith, the net resembling a bag and having an entranceway including an opening to permit a creature to enter the trap and to hinder leaving the trap, the trap being characterized by:

(a) first and second frame members hinged together to permit swinging therebetween so as to permit erection of the frame from a folded position to an erected position,

(b) extension means connected to and adapted to cooperate with the frame members so as to be strained when the frame is in the folded position for providing a force from the strained extension means which forces the trap from the folded position to the erected position,

(c) limiting means cooperating with the frame members to limit additional movement of the frame members from the erected position that might otherwise occur due to force from the extension means,

(d) releasable means cooperating with the frame members to permit the trap to be folded,

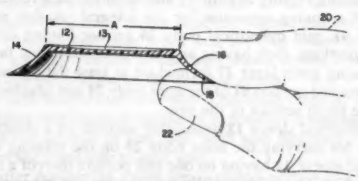
(e) support means for maintaining the entranceway in an operable position to permit entrance of creatures when the trap is in the erected position.

4,354,326

TOY FLIP CAP

Kenneth D. Mathews, 1833 W. Ash St., Fullerton, Calif. 92833

Filed Jul. 9, 1981, Ser. No. 281,670
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—74 D **3 Claims**



1. A flip-top toy comprising:

a circular body member formed having an approximate diameter between three-quarters of an inch to one and one-half inch;

wherein said circular body includes a substantially flat top

wall having an annular flange wall extending radially downward and outward from said flat top wall;

said flange having a curvilinear cross-sectional configuration defined by an outer concave surface and an inner convex surface, whereby said surfaces are tapered inwardly of each other as said flange wall extends radially outward;

said tapered surfaces being adapted to be positioned between an individual's thumb and middle finger, whereby the snapping of said thumb and middle finger results in an aerodynamic flight of said top through the air.

4,354,327

TISSUE CULTURE METHOD FOR ASEXUAL PROPAGATION OF PINE TREES AND MEDIUM FOR USE THEREWITH

Richard H. Smeltzer, Natchez, Miss., and Linda M. Cello, Southfields, N.Y., assignors to International Paper Company, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,915
Int. Cl.[3] A01G *1/00*
U.S. Cl. 47—58 14 Claims

1. A tissue culture method for asexually propagating loblolly pine trees comprising:

stimulating pine seeds for germination;

decoating the stimulated seeds;

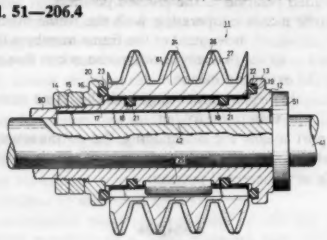
inoculating the decoated seeds on a culture medium containing from about 1 to 20 mg./l of benzylaminopurine and from 0 to 30 mg./l of abscisic acid to promote the formation of multiple adventitious buds that can be rooted to provide multiple plants from a single seed.

4,354,328

SCREW TYPE HONE ASSEMBLY FOR THE HONING OF GEARS

Masato Ainoura, 1253-Eguchi, Kitashige Yasu-cho, Miyaki-gun, Saga-ken, Japan

Filed Aug. 12, 1980, Ser. No. 177,485
Claims priority, application Japan, Feb. 11, 1980, 55-15146
Int. Cl.[3] B23F *21/03;* B24D *5/00*
U.S. Cl. 51—206.4 6 Claims



1. A screw type hone assembly for the honing of gears, comprising a substantially cylindrical body **24** of the hone having on the outer periphery a spirally threaded portion **61** possessing rigidity in entirety and mounted on a rotating shaft **41** of a honing apparatus for the integral rotation with said shaft **41**, said cylindrical body **24** further having cylindrical end portions, each having an outer circumferential face;

a honing grain layer **27** formed on at least the surface of the threaded portion **61** of the hone body **24** and adapted to hone the tooth surface of the gear;

a cylindrical sleeve **12** detachably secured on a rotating shaft **41** for carrying the hone body **24** on the rotating shaft **41**, said sleeve **12** having on one end portion thereof a retaining portion **13** which radially projects on the outer periphery and on the other end a retaining ring **16** substantially in the same shape as that of the retaining portion **13**, said retaining ring **16** being urged toward said retaining portion **13** by nuts **15** threaded onto the sleeve **12** from outside the retaining ring **16**, both said retaining portion **13** and said retaining ring **16** having cylindrical portions **28** and **29**, respectively, extending axially inwardly from the respective outer peripheries in a face-to-face relation, each cylindrical portion having an interior circumferential surface overlapping and retaining the outer circumferential face of the respective cylindrical end portion of the body **24**, whereby the hone body **24** is fixedly clamped between said retaining portion **13** and said retaining ring **16**; and

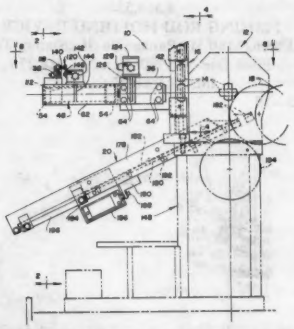
resilient members interposed between said hone body **24** and said sleeve **12**, whereby said resilient members permit the body **24** to be elastically axially and radially movable on the rotating shaft **41**.

4,354,329

LOADER FOR GRINDING MACHINE

Lawrence A. Ambrose, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed Sep. 22, 1980, Ser. No. 189,533
Int. Cl.[3] B23Q *7/04;* B65G *47/06*
U.S. Cl. 51—215 H 17 Claims



1. A grinding machine loader comprising: a fixed base; a movable carriage; a pivotal connection that supports the carriage on the fixed base for movement about a vertical axis between a use position and an access position that allows access to the grinding machine with which the loader is used, a loading member including a resilient finger, said loading member being mounted on the carriage for movement with respect thereto in a loading direction such that the resilient finger engages a workpiece to be ground during such movement and deflects so as to grip the workpiece, and a workpiece positioner that is mounted for movement on the carriage and resiliently biased with a sufficient force to counteract the force applied to the workpiece by the finger deflection such that the positioner blocks movement of the workpiece during the initial gripping thereof by the finger, the loading member movement thereafter moving the gripped workpiece against the bias of the positioner to provide loading thereof in preparation for grinding.

4,354,330

FLAT-CORNERED TRIANGULAR MEDICAL COLUMN

Wesley W. Schwartz, Oshkosh, Wis., assignor to Square D Company, Palatine, Ill.

Filed Dec. 31, 1980, Ser. No. 221,871
Int. Cl.[3] A47B *83/00;* A61G *7/06*
U.S. Cl. 52—28 6 Claims

1. A medical power service column for use in a hospital room having a floor and ceiling and sources of electricity and gases, said medical column supplying electrical power, lighting and gases and also providing a centralized support for medical equipment, said medical column comprising:

a base having a flat-cornered triangular cross-section shape;

a wall enclosure having an upper end and a lower end at-

tached to said base, and having a flat-cornered triangular cross-sectional shape in alignment with said base, said wall enclosure containing electrical and gas supply lines and electrical equipment and supporting electrical and gas outlets and means for holding medical equipment on its outer surface, said wall enclosure comprising;

three support beams having upper and lower ends located at each of the corners of said wall enclosure, said lower ends of said support beams being attached to said base, three face panels attached between said support beams to form said flat-cornered triangular shape,

and

support rails attached to said support beams and located directly behind said face panels for supporting electrical and gas outlet boxes and other equipment;

a top cover attached to said upper ends of said three support beams and covering the upper end of said wall enclosure, said top cover having a flat-cornered triangular shape in alignment with said wall enclosure, said top cover also having an aperture for receiving said sources of electricity and gases; and

wherein said medical column is positioned such that one of the corners of said medical column is next to a patient's bed; and

wherein said flat-cornered triangular shape of said medical column allows free access to a patient in the hospital bed while supporting medical equipment in close proximity to the patient.

4,354,331

COLLAPSABLE STRUCTURES

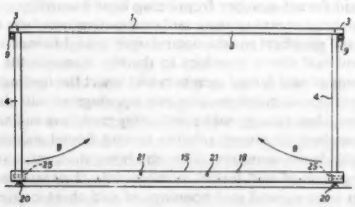
Leslie A. Dyke, Chigwell, England, assignor to Consort Project Developments Limited, London, England

Continuation of Ser. No. 968,734, Dec. 12, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,442

Claims priority, application United Kingdom, Dec. 15, 1977, 52334/77

Int. Cl.³ E04B *1/346*

U.S. Cl. 52—66 **18 Claims**



1. A collapsible structure comprising first and second pairs of spaced folding struts, each folding strut having one end which is pivoted to a first rigid element to enable each of said struts to be rotated from a retracted position to an extended position, said struts being located at opposite ends of said rigid element, said struts each having an abutment surface spaced away from its associated pivot and extending in a plane substantially parallel to the pivot axis thereof, each said abutment surface being provided on an abutment projecting from an associated strut, each said abutment surface being shaped to engage a cooperating engagement surface carried on said rigid element to locate said struts in their extended positions, releasable means for forcing said abutment surfaces and cooperating engagement surfaces to be held in contact with each other in the extended positions of said first and second pairs of spaced folding struts, a rigid connecting member extending between the struts of each pair of struts on which said abutment surfaces for said pairs of struts are formed, a portion of each rigid element extending between said pivots being shaped to provide said engagement surface for cooperation with the abutment surfaces, said abutment surfaces on said connecting member face in a direction substantially normal to the lengthwise direction of the struts away from the pivots, said rigid elements being part of a polygonal frame having at least four corners with a strut at each corner and being pivoted thereto by an associated pivot, the axes of pairs of pivots being coaxial, a second rigid element spaced from said first rigid element and being disposed adjacent another end of each of said struts remote from said strut one ends, means for connecting said strut another ends to said second rigid element through slidable connections therebetween, and said releasable means being disposed between said second rigid element and said strut another ends for rigidly connecting the same together when said pair of struts are in their extended positions.

4,354,332

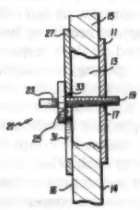
PLASTER AND DRY WALL HOLE REPAIR

Arthur H. Lentz, 908 Brantley Rd., Richmond, Va. 23235

Filed Apr. 29, 1980, Ser. No. 145,202

Int. Cl.³ E04G *23/00*

U.S. Cl. 52—514 **8 Claims**



1. A method for repairing a hole in a front surface of a wall without having access to the back surface thereof, said method comprising steps of:

inserting a backing means through the hole to the back side of the wall, and thereafter controlling the position of said backing means from the front side of the wall to cover a portion of the backside of said wall with said backing means, said covered backside portion substantially encompassing said hole, said backing means having at least one adjustable fastening means attached thereto and protruding through said hole when said backing means covers said backside portion of said wall which is used for controlling the position of the backing means;

filling said hole in said wall with a patching material while holding said backing means in a position covering said backside portion of said wall with said fastening means from the front side of said wall;

thereafter positioning a dam means over a portion of a front side of said wall, said front-side portion substantially encompassing said hole, said dam means being adapted to receive said fastening means protruding through said hole;

thereafter tightening said fastening means of said backing means against said dam means so as to exert pressure on

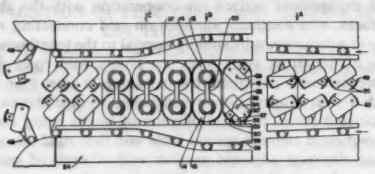
said patching material between said dam means and said backing means; and,

removing said fastening means and said dam means from said front side portion of said wall.

4,354,333
PACKAGING APPARATUS

Edward J. McArdle, Morton Grove, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 14, 1980, Ser. No. 140,071
Int. Cl.³ B65B 21/18
U.S. Cl. 53—48 10 Claims



1. An apparatus for applying a tube of flexible elastic plastic material in stretched encirclement of at least two generally cylindrical containers creating a package thereby as containers are continuously carried therethrough, said apparatus comprising a plurality of continuous series of groups of jaw elements mounted on each of a pair of continuous loops of conveyor elements, the pair of conveyor elements arranged so that portions of their closed paths of travel are closely adjacent and opposing one another, forming a package making path extending longitudinally of the apparatus, means for delivering two rows of containers to said package making path and means for delivering packages of pairs of said containers from said package making path, the jaw elements of each group on each of said conveyors formed to be movable relative to one another, wherein the jaw elements are arcuate, shell-like devices, cantilever secured to container receiving bases, the groups of jaw elements being arranged on their respective conveyor to present pairs of directly opposing, interacting groups as they pass along the package making path, the combination of directly opposing groups of jaw elements forming a series of tube applying stations adapted for continuous movement along the package making path, means for controlling the position of the jaw elements relative to each other to move opposing groups of jaw elements apart and together thus opening and closing the tube applying stations in a consecutive repeating pattern so that convex surfaces of the opposing groups of said elements face each other when in a closed position to permit unstretched tubes to be applied therearound and so that concave surfaces face each other when in an open position to accomplish the stretching of the tubes as the conveyor elements carry the groups of jaw elements continuously along the package making path, first to stretch tubes permitting an array of containers to be placed within the tube applying station and second to permit the package to be removed from the tube applying stations, means for transferring a succession of tubes in flattened condition to the tube applying stations and means to place containers within the stretched tubes carried by said opened jaw elements.

4,354,334
APPARATUS FOR ATTACHMENT OF SHEET CARRIERS TO CONTAINERS

Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Tokyo, Japan

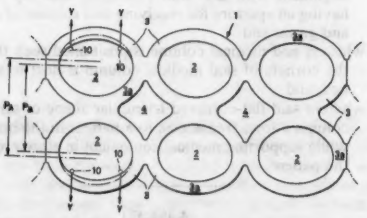
Filed Jul. 24, 1980, Ser. No. 171,680
Int. Cl.³ B65B 27/04
U.S. Cl. 53—48 4 Claims

1. An apparatus for the attachment of a plastic sheet carrier having a plurality of openings each surrounded by an annular portion to a plurality of containers having peripheral edges of a diameter larger than the diameter of said openings by forcibly expanding said annular portions of said openings and causing said peripheral edges of said containers to come into tight engagement with said annular portions, which apparatus comprises:

(a) funnel members each having a first tapered portion and a second tapered portion arranged from the basal end to the leading end thereof and each having a plurality of slits longitudinally inserted from the leading end at least to said first tapered portion on the circumferential surface thereof so as to be radially contractable, the largest diameter of said first tapered portion being smaller than the diameter of said openings, the leading ends of said funnel members being engageable with the peripheral edges of said containers,

(b) sleeve members associated one each with said funnel members and each having an opening for accommodating the associated funnel member therein and having a plurality of slits longitudinally inserted from the edge of said opening on the circumferential surface thereof, the diameter of said opening in its normal state being made smaller than the largest diameter of said second tapered portion,

(c) contracting members associated one each with said funnel members and each being disposed concentrically between the associated funnel member and its sleeve member, being movable relative to said two members and being advanceable to cause the leading end thereof to be engaged with said first tapered portion of said funnel member to thereby contract said funnel member so as to cause the leading end of said funnel member to pass through said opening of said sheet carrier,



(d) axial members associated one each with said funnel members and each disposed inside the associated funnel member and provided on the leading end thereof with a swollen portion which protrudes from the leading end of said funnel member as said contracting member advances toward the leading end of said funnel member and is retracted within the leading end of said funnel member as said contracting member moves toward the basal end of said funnel member to thereby prevent the leading end of said funnel member from being bent inwardly,

(e) driving means causing said contracting members and said axial members to advance relative to said funnel members and said sleeve members to thereby contract the leading ends of said funnel members and insert the leading ends of said funnel members into said openings of said sheet carrier, then causing said contracting members and said axial members to retract relative to said funnel members and said sleeve members to thereby bring the contracted leading ends of said funnel members into their original states so as to expand said openings of said sheet carrier at the leading ends of said sleeve members and subsequently causing said funnel members, said contracting members and said axial members to retract relative to said sleeve members,

(f) means for disposing the peripheral edges of said containers to face the openings of said sheet carrier when the openings of said sheet carrier are expanded at the leading ends of said sleeve members, and

(g) means for transmitting a fresh plastic sheet carrier to a position corresponding to the leading ends of said funnel members after said containers to which said sheet carrier is attached are removed from said funnel members.

4,354,335

METHOD FOR ORDERLY TRANSPORT AND STORAGE OF FLAT OBJECTS AND A PLASTIC BAG SUITABLE THEREFOR

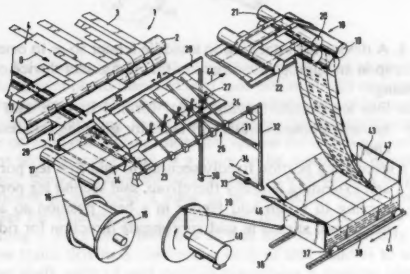
Alfons Meyer, Donauschwabenstrasse 40, D-7050 Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 34,756, Apr. 30, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,949

Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819887

Int. Cl.³ B65B *35/32*

U.S. Cl. 53—475 13 Claims



1. A method for ordering, transporting and storing flat empty bags (4) closed at three sides and having an opening (6) at the fourth side and an extending flap (11) located adjacent said bag opening and projecting therefrom,

said bags being aligned seriatim and in overlapping position in shingled arrangement on a carrier web (15) in which the carrier web provides for storage and delivery of the bags to a subsequent processing station,

comprising the steps of

providing a tear or severing or fracture line (13) between the extending flap (11) and the remainder of the bag;

transporting the bags seriatim in a first direction (0) with their flaps extended at right angles to said first direction;

moving the carrier web (15) in a direction (44) which is perpendicular to said first direction (0);

forwarding the bags, one after another, in predetermined time intervals in said first direction (0) at a level above said carrier web (15) from a first side of the carrier web and across the carrier web into an abutment or stop means (27) located at the second side of the carrier web;

dropping said bags over and on the carrier web in mutually overlapping position while guiding the drop of the then dropping bag on the web and forming a shingled arrangement of bags on the web;

aligning each side of the bag on the carrier web and exactly positioning the bags on the carrier web with their flaps at defined distances (A) from one another;

permanently and irremovably attaching said flaps of bags, as positioned and aligned onto said carrier web, seriatim at said defined distances (A) from one another to insure separation of the bag from the flap at said tear, severing or fracture line upon application of a severing force to the bag, while leaving the flap attached to the web;

and storing said carrier web and said bags for subsequent separation of said bags from said flaps to permit subsequent filling, said separation and removal of said bags (4) from the web (15) while leaving the flaps (11) attached to the web (15).

4,354,336

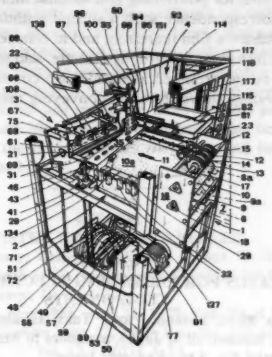
AUTOMATIC MACHINE FOR LOADING AND UNLOADING FILMS IN RADIOGRAPHY CASSETTES

Cesare Azzaroni, Via Toscana, 51, Bologna, Italy

Filed Jan. 15, 1980, Ser. No. 112,313

Int. Cl.³ B65H *1/00*

U.S. Cl. 53—505 12 Claims



1. Automatic machine to load and unload films in radiography cassettes of differing formats, comprising:

a first operation station in which inserting means operate to insert the radiography cassettes, one at a time, in the machine and to expel the reloaded radiography cassette therefrom;

a second operation station, arranged subsequent to the first station, having at least one conveying means and at least one pushing means, in operation for carrying the incoming radiography cassette to contact at least one striker element, with associated detecting means for detecting the radiography cassette format; an opening means for opening the radiography cassette, arranged alongside and above said conveying means, and withdrawing means for withdrawing from the opened radiography cassette the film contained therein and for transferring the film to transfer means for transferring the film to a developing apparatus;

a third operation station, containing said transfer means; and

a fourth operation station containing a magazine for containing different film formats to reload the radiography cassette inserted in the machine,

wherein said fourth operation station is arranged alongside said second operation station, said magazine being arranged alongside said conveying means opposite to the side along which said opening means is arranged, said magazine being composed of a number of substantially identical film-holding cassettes, arranged at different levels, vertically displaced from one another, each resting on an associated carriage means which slides reciprocally in the direction of the second operation station;

a supporting plate for a number of frames for said carriage means for said number of film-holding cassettes, said supporting plate mounted for sliding vertically on slides fixed to a frame of the machine for vertically moving said frames supported thereby, said number of frames substantially equalling the number of film-holding cassettes;

said supporting plate being equipped with a stylus element located on a line joining a plurality of actuators of a series of level signalling microswitches, vertically displaced from one another and interspaced at distances substantially equal to those between the levels at which said film-holding cassettes rest on the associated carriage means therefor,

said microswitches being connected along with the means for detecting the cassette format inserted in the machine,

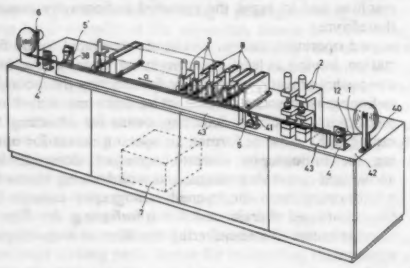
in a feed circuit of a geared motor through which upward and downward movement of said supporting plate and therefore of the whole magazine is obtained, to stop the vertical movement of the magazine when said stylus reaches a position of the level signalling microswitch relating to a specific film-holding cassette containing the films of suitable format to that detected in the radiography cassette, for positioning said specific film-holding cassette in correspondence with a second withdrawing means to withdraw a film therefrom and to transfer the withdrawn film into said radiography cassette, said second withdrawing means arranged alongside said conveying means and operating above the same conveying means.

4,354,337

APPARATUS FOR PACKAGING ELECTRICAL CIRCUIT COMPONENTS

Kazuhiro Mori, Katano; Yasuo Taki, Hirakata, and Shigeru Araki, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 28, 1980, Ser. No. 125,658
Claims priority, application Japan, Mar. 5, 1979, 54-25807
Int. Cl.³ B65B *47/00*
U.S. Cl. 53—559 **7 Claims**



1. An assembly apparatus for electrical chip components comprising;

means for supporting a carrier tape having recesses therein, with at least upper openings, formed at uniformly spaced intervals along the tape;

means for intermittently feeding the tape a predetermined distance corresponding to said intervals;

a plurality of transferring units spaced along the carrier tape at intervals equal to or a multiple of said recess intervals for transferring an electrical chip component from a supply thereof into a tape recess when said tape is at rest, each of said transferring units being adapted for transferring a single kind of an electrical chip component different from the kind to be transferred by an adjacent transferring unit, each of said transferring units including an in-line feeder for the components, a receptor at a predetermined position near the tape for receiving a component from said feeder, and mechanism disposed above said receptor for picking up the component thereon and depositing the component into a tape recess;

programmed means for controlling the transferring operations of said units; and

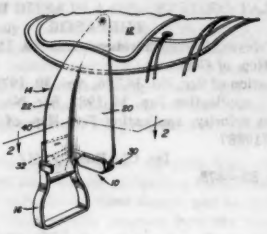
binding means for joining a cover tape onto said carrier tape after the transferring operations to cover said upper openings of said recesses containing therein electrical chip components.

4,354,338

FENDER BENDING ATTACHMENT

Vernon E. Martin, 504 Sunland Dr., Clovis, N. Mex. 88101

Filed Jan. 25, 1980, Ser. No. 117,217
Int. Cl.³ B68C *3/00*
U.S. Cl. 54—47 **12 Claims**



1. A device for attaching to a saddle fender so as to orient a stirrup in an appropriate direction for riding, said device comprising:

a first leg portion having a slot formed therein, said slot having opposed abrasive surfaces for gripping said fender; and

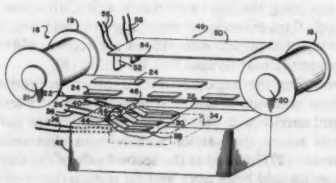
a second leg portion fixedly secured to said first leg portion and extending laterally therefrom, said second leg portion serving to retain said fender in a bent position so as to orient said stirrup in said appropriate direction for riding.

4,354,339

LAWN MOWER APPARATUS

Clarence Nokes, 120 Third St., NE., Washington, D.C. 20002

Filed Nov. 14, 1980, Ser. No. 207,031
Int. Cl.³ A01D *75/28*
U.S. Cl. 56—10.2 **34 Claims**



1. A programmed steering and cutting blade control apparatus for self-contained lawn mowers having steering control means and cutting blade control means comprising:

a flexible elongated member;

actuating means disposed on an upper and lower surface of said flexible elongated member; said actuating means embodying in code a predetermined series of steering and cutting blade commands;

a plurality of rotatable storage means for retaining said flexible elongated member;

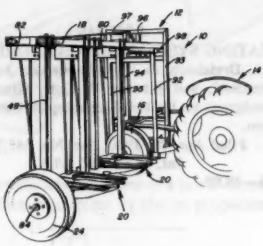
actuator means disposed above and below said flexible elongated member for contacting actuating means thereon to read the coded commands thereon; said actuator means being connected to the steering control means and cutting blade control means for operating those means in a manner dictated by the coded commands.

4,354,340

MECHANICAL PRUNING DEVICE

Edgar M. Huggins, P.O. Box 527, Kingstree, S.C. 29556, and Thomas M. Brandon, 321 Azelia Dr., Conway, S.C. 29526

Filed Sep. 26, 1980, Ser. No. 191,308
Int. Cl.³ A01D *45/16*
U.S. Cl. 56—27.5 17 Claims



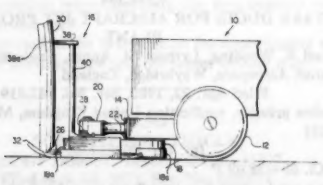
1. An apparatus for defoliating a defined vertical section of a plurality of plants disposed in at least one row, said apparatus comprising in combination: an elongated tool bar mounting a plurality of pruning heads, each pruning head comprising a pair of rotatable paddles laterally spaced by a distance sufficient to accept the stalk of a plant to be defoliated therebetween; support means for supporting said tool bar at a height sufficient to pass over a plant to be defoliated; power drive means for rotating said paddles, said power drive means including a drive shaft mounted to said tool bar, a plurality of drive trains drivingly connecting each of said paddles to said drive shaft, each of said paddles comprising a resilient blade, each of said blades being mounted on a paddle shaft, each of said paddle shafts being disposed at an upwardly inclined angle, said inclined angle being adjustable to control the pruning swath of said paddle, each of said blades being generally planar in configuration with forwardly converging edges forming a generally triangular forward blade portion, each of said pruning heads including a pair of leaf support arms, one of said arms extending codirectionally adjacent each of said paddles for deflecting drooping leaves out of the way of said paddles, each of said drive trains including an intermediate shaft disposed in a parallel plane to each of said paddle shafts, and a chain and sprocket drive connected between each intermediate shaft and each paddle shaft, the chain of said chain and sprocket drive undergoing a longitudinal twist to compensate for the inclined angle of said paddle shaft.

4,354,341

BRUSH CUTTER

Milton R. Hathaway, 40 Quarry Rd., Bolton, Conn. 06040

Filed Jun. 1, 1981, Ser. No. 268,687
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—503 1 Claim



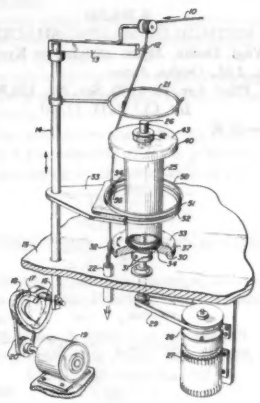
1. A brush cutting attachment for a tractor equipped with a power take-off shaft projecting forwardly of the tractor, said attachment comprising a right angle drive unit, a generally vertical shaft which is oriented at right angles to and driven by said power take-off shaft through said right angle drive unit, a housing pendulously supported by said right angle drive unit and with said vertical shaft extending downwardly into said housing, said housing having a front opening spaced forwardly of said vertical shaft, laterally spaced ground engageable skids for supporting said housing at locations spaced on either side of said vertical shaft, a single rotary saw blade in said housing so arranged that a portion only of its periphery defines an arcuate cutting path passing through said housing opening, means for adjustably mounting said saw blade vertically on said vertical shaft, a horizontal laterally extending brush engageable bar located above said housing and having its leading edges spaced forwardly of said housing opening, said leading edge oriented in a vertical plane which is perpendicular to said power take-off shaft and located just inside the most forward peripheral portion of said saw blade to achieve at least some bending of the brush after the blade contacts the brush and before the blade binds in the brush.

4,354,342

TWISTER RING AND TRAVELER

Robert M. Rumsey, College Park, and Robert W. Thornton, Douglasville, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 7,955, Jan. 31, 1979, Pat. No. 4,246,746.
This application May 22, 1980, Ser. No. 152,160
Int. Cl.³ D01H *7/52*
U.S. Cl. 57—119 8 Claims



1. A twister ring, which comprises: two interconnected rings positioned to form a race in which a traveler can rotate, and a slit extending through said rings through which yarn can pass.

4,354,343

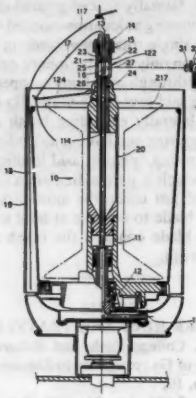
AUTOMATIC TAKE-IN FOR DOUBLE-TWISTING SPINDLES

Armando D'Agnolo, Porcia; Luigi Colli, and Ugo Gaiotti, both of Pordenone, all of Italy, assignors to Officine Savio S.p.A., Pordenone, Italy

Filed Sep. 24, 1980, Ser. No. 190,187
Claims priority, application Italy, Sep. 24, 1979, 83456 A/79
Int. Cl.³ D01H *15/00, 7/86*
U.S. Cl. 57—279 9 Claims

1. An automatic take-in device for a double twisting spindle including a spindle body having a bore through which a filament is threaded, a supply reel fitting over said spindle body, said bore having a lateral opening therein above said reel, said bore at said opening defining a chamber inside said body and a tensioning means in said chamber for tensioning said filament being twisted which tensioning means is capable of temporarily freeing said filament bore during the threading stage of said

filament comprising an injector for fluid under pressure temporarily insertable into said chamber through said lateral opening



and at least partially displacing said tensioning means to free said bore.

4,354,344

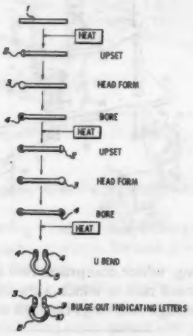
METHOD OF MAKING SHACKLE

Kazutomo Yagi, Osaka, Japan, assignor to Kyoritsu Manufacturing Co., Ltd., Osaka, Japan

Filed Apr. 10, 1980, Ser. No. 138,995

Int. Cl.³ B21L *13/00*

U.S. Cl. 59—35 R **3 Claims**



1. A method of making a shackle, comprising the following steps:

providing an elongated round bar having two ends; heating the bar;

upsetting the ends of the bar into convex heads;

compressing the upset ends of the bar to form circular heads;

drilling holes in the centers of the circular heads;

bending the bar in a manner that the holes are aligned with each other to form a shackle;

providing a first die having a recess shaped to receive a first half of the shackle;

providing a stamping plate in which indicia are present in relief;

providing a second die having a recess shaped to receive the stamping plate in another half of the shackle;

inserting the stamping plate into the second die;

introducing the shackle between the second die and the first die; and

closing the second die and first die upon the shackle and thereby causing the stamping plate to strike the surface of the second half of the shackle and stamp indicia in said surface thereof in a manner that the indicia are surrounded by an island and are unprotruding above said surface.

4,354,345

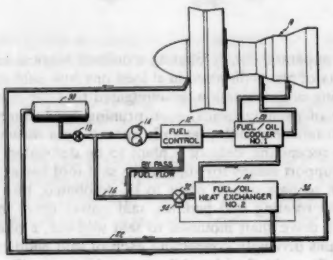
FUEL HEATING SYSTEM FOR GAS TURBINE ENGINE

Raymond A. Dreisbach, Jr., Old Saybrook; James G. Griffin, West Hartford, and Edward F. Cole, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 29, 1980, Ser. No. 145,191

Int. Cl.³ F02C *7/06*

U.S. Cl. 60—39.08 **4 Claims**



1. A system for heating the fuel in a fuel tank for aircraft which system includes a lubrication system for a jet engine, a fuel control that meters fuel to said engine and a heat exchanger that places the fuel and lubricant of said lubrication systems in indirect heat exchange relation, a pump for pressurizing the fuel prior to being admitted to the fuel control which receives an excess of fuel over that being metered to the engine, and a bypass diverting fuel from said engine continuously flowing said excess fuel, said fuel heating system including another heat exchanger having the lubricant connected in series with said heat exchanger, means for interconnecting said excess fuel to said other heat exchanger so as to place said fuel in indirect heat exchange relation with said lubricant, conduit means leading said heated fuel from said other heat exchanger into said fuel tank, means for selectively turning on and off the flow of bypass fuel to said other heat exchanger and said bypass continuously communicating with the inlet of said pump independently of said selective means.

4,354,346

INTAKE DUCTS FOR AIRCRAFT JET PROPULSION PLANT

Michael S. Wooding, Lytham St. Annes, England, assignor to British Aerospace, Weybridge, England

Filed Apr. 22, 1980, Ser. No. 142,819

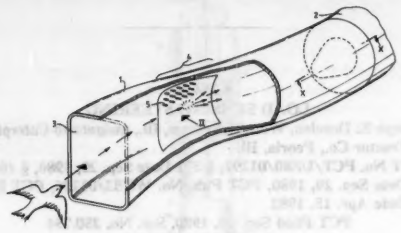
Claims priority, application United Kingdom, May 24, 1979, 7918191

Int. Cl.³ F02C *7/05*

U.S. Cl. 60—39.09 P **3 Claims**

1. An intake duct for aircraft jet propulsion plant, including a surface region on which a bird travelling along the duct will impact, a multiplicity of impalement members of rod-like form fixed at that surface region, each member being of such dimensions and so disposed relatively to the other impalement members that a minor part of an impacting bird is impaled thereon

and retarded relatively to the remainder of the bird, which remainder is allowed to continue its travel, whereby the resultant distortion produces bird debris of a lower density than the pre-impact bird for ingestment by the jet propulsion plant.

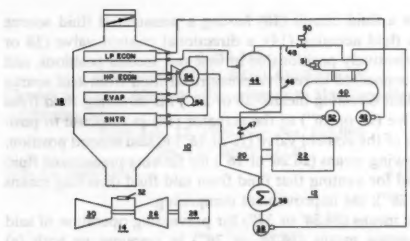


4,354,347

COMBINED CYCLE SYSTEM FOR OPTIMIZING CYCLE EFFICIENCY HAVING VARYING SULFUR CONTENT FUELS

Leroy O. Tomlinson, Schenectady, N.Y., and Richard T. Cuscino, North Andover, Mass., assignors to General Electric Company, Lynn, Mass.

Filed Jun. 2, 1980, Ser. No. 155,473
Int. Cl.³ F02G *5/02*
U.S. Cl. 60—39.18 B **1 Claim**



1. A combined cycle power plant having at least one gas turbin and at least one steam turbine thermally interconnected through at least one heat recovery steam generator, said heat recovery steam generator including at least one economizer section adjacent to the heat recovery steam generator exhaust gas outlet; the power plant further comprising:
a deaerator heating feedwater to the economizer inlet;
a flash tank connected to the economizer outlet for producing steam from the economizer effluent;
a first conduit interconnecting the flash tank and the deaerator;
a second conduit interconnecting the first conduit with a steam turbine inlet
a valve disposed in the first conduit for apportioning steam between the deaerator and the steam turbine inlet.

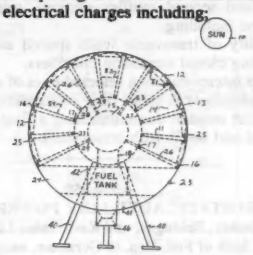
4,354,348

SOLAR SPACE VEHICLE

Robert E. Lee, 479 Dean St., Brooklyn, N.Y. 11217

Filed Nov. 14, 1977, Ser. No. 850,974
Int. Cl.³ F03G *7/02*; F02K *11/00*
U.S. Cl. 60—203.1 **1 Claim**

1. A space vehicle comprising:
a. a large diameter outer sphere;
b. a smaller diameter spherical copper boiler located inside and at the approximate center of said outer sphere;
c. means for delivering water to the interior of said copper boiler;
d. means for exposing said copper boiler to solar radiation and to a flow of electrical charges whereby steam is generated, in said boiler;
e. means for delivering said generated steam from the boiler to the environment outside the outer sphere to thereby provide a thrust component and hence a propulsion force for the vehicle;
f. said means for exposing the boiler to solar radiation and said flow of electrical charges including;



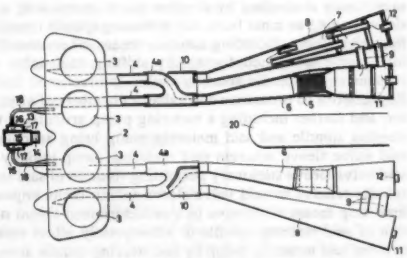
1. tapered cones mounted about the entire periphery of the copper boiler,
2. said tapered cones having their narrow ends adjacent said boiler and their wider ends eminating to openings in the outer sphere,
3. lenses mounted in the wider ends of the tapered cones substantially contiguous with the outer surface of the outer sphere,
4. tourmaline gem stones lining the side walls of said cones whereby a piezoelectric effect is generated upon solar energy impinging on the side walls of the cones.

4,354,349

EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Junji Otani, Omiya, and Yasuo Ikenoya, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,317
Claims priority, application Japan, Sep. 7, 1979, 54-114167
Int. Cl.³ F01N *3/28, 1/08*
U.S. Cl. 60—299 **6 Claims**



1. In combination with a two-wheeled motor vehicle having an internal combustion engine, an exhaust system comprising:
an elongate first muffler section having a exterior surface entirely exposed to atmosphere and incorporating a catalytic converter and which has a front, upstream end connectable to an exhaust manifold of said engine,
an elongate second muffler section having an exterior surface entirely exposed to atmosphere and incorporating

sound attenuating elements, said second section extending in adjacent side-by-side relationship with said first muffler section,

a conduit interconnecting said first muffler section at its rearward, downstream end with the adjacent rearward end of said second muffler section, and

at least one outlet conduit associated with said second muffler section and which communicates the interior of said second muffler section with atmosphere at a position spaced rearwardly of said conduit interconnecting said first and second muffler sections, said second muffler section including:

a plurality of transverse walls spaced axially thereof and defining closed expansion chambers,

conduits interconnecting selected ones of said closed expansion chambers in series flow relationship, and

said outlet conduit communicating a final expansion chamber of said series with atmosphere.

4,354,350

HYDROSTATIC AUXILIARY POWER STEERING

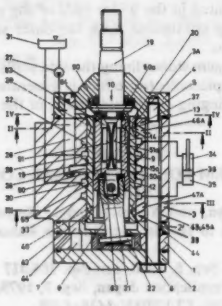
Werner Tischer, Bobingen, and Karl-Heinz Liebert, Schwabisch Gmund, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,583

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919050

Int. Cl.³ B62D *5/08*; F15B *13/04*

U.S. Cl. 60—384 **11 Claims**



1. In a servomotor system having a housing with flow passage means controlled by a valve means comprising a valve sleeve having an inner bore, and a steering spindle coaxial with the valve sleeve, including actuator means wherein said steering spindle is rotated for axially shifting said valve sleeve responsive to spindle rotation within bidirectional limits for flow control to pressurize and exhaust chambers of a servomotor, and further including a metering pump articulated to said steering spindle and said metering pump being articulated to said valve sleeve wherein said metering pump initially holds said valve sleeve stationary permitting rotation of said steering spindle relative to said valve sleeve within limits imposed by limit stop means responsive to a predetermined extent of rotation of said steering spindle to subsequently effect rotational drive of said metering pump by said steering spindle along with rotation of said valve sleeve without further axial shift;

the improvement which comprises:

said actuator means comprising a separate coupling sleeve (**9**) within said valve sleeve (**20**) and engaging the bore thereof and coupling means (**10**) whereby said coupling sleeve is coupled to said steering spindle (**19**) for rotation therewith and having tolerance for transverse misalignment therewith and further comprising valve sleeve axial shifting means (**13,14**) between said coupling sleeve and said valve sleeve whereby rotation of said steering spindle rotates said coupling sleeve to effect axial shift of said valve sleeve for flow control.

4,354,351

LOAD SENSING STEERING

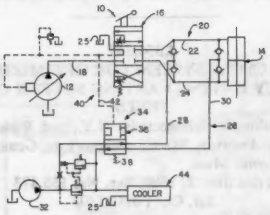
Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01291, § 371 Date Sep. 29, 1980, § 102(e) Date Sep. 29, 1980, PCT Pub. No. WO82/01226, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 29, 1980, Ser. No. 250,754

Int. Cl.³ F15B *13/04*

U.S. Cl. 60—456 **5 Claims**



1. In a fluid circuit (**10**) having a pressurized fluid source (**12**); a fluid actuator (**14**); a directional control valve (**16** or **16''**) selectively positionable in first and second positions, and being connected to receive pressurized fluid from said source (**12**); fluid directing means (**20** or **20''**) for directing fluid from the valve (**16** or **16''**) to the actuator (**14**) in response to positioning of the control valve (**16** or **16''**) in said second position; and flowing means (**26,26'** or **26''**) for flowing pressurized fluid into and for venting that fluid from said fluid directing means (**20** or **20''**); the improvement comprising:

logic means (**34,34'** or **34''**) for preventing operation of said flowing means (**26,26'** or **26''**) in response to both (a) positioning of said valve (**16**) in said second position and (b) the pressure of the fluid in said fluid directing means (**20** or **20''**) exceeding a preselected magnitude.

4,354,352

CATALYTIC COATING TO DIRECTLY GENERATE HEAT UPON THE SURFACE OF A HEAT DOME

John L. Hoke, Bethesda, Md., and Theodore W. Sudia, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 15, 1981, Ser. No. 254,318

Int. Cl.³ F02G *1/04*

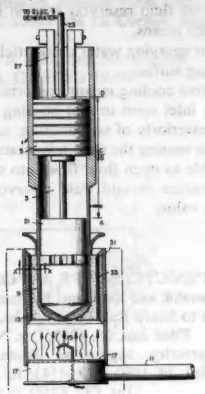
U.S. Cl. 60—517 **9 Claims**

1. A method of transferring heat energy from a heat source to a confined working fluid of an external combustion engine comprising the steps of:

(a) supplying a combustible fuel in stoichiometric preparation to an engine's combustion chamber having a heat dome with catalytic material bonded directly on its external surface, said dome acting to confine and being in direct physical contact with the working fluid to be heated;

(b) providing for the flameless combustion of the fuel on the catalytic surface to effect the direct transfer of heat energy through the dome's material to the confined working fluid

located in direct physical contact with the material constituting the internal surface of the heat dome; and



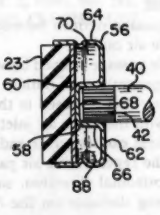
(c) utilizing mechanical means to receive a work output from the heated working fluid.

4,354,353

COMPRESSION ROD ASSEMBLY

Charles E. Laue, Wilmette, Ill., assignor to Hamilton-Pax, Inc., Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 113,064
Int. Cl.³ B60T *13/20*
U.S. Cl. 60—554 **12 Claims**



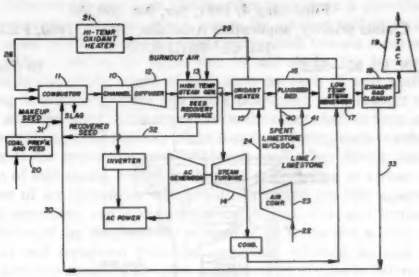
1. In a compression rod assembly for tight engagement at its ends, respectively, with a diaphram-mounted valve body in a power brake cylinder around a flow hole in said body and with a piston in a master brake fluid cylinder; the combination of a hollow button having an annular radial wall, spaced inner and outer axial walls connected to the radial wall, a radial wall connected to the inner axial wall and defining therewith a hollow boss having a socket, said outer axial wall extending axially beyond said boss, a noncompressible disc having a diameter complementary to and snugly fitted against said outer axial wall along its inner diameter, said disc seated against said boss, a resilient disc having its outer diameter complementary to and snugly fitted against the inner diameter of said outer axial wall, said resilient disc seated at its inner side against the noncompressible disc and said resilient disc seated at its outer side against said valve body around its flow hole, a noncompressible rod having one end tightly fitted in said socket, and a noncompressible plunger threaded into the other end of said rod, said plunger having a head engaging the piston.

4,354,354

SYSTEM FOR RECOVERY OF SULFUR DIOXIDE IN AN MHD POWER PLANT

Stanley R. Wysk, Suffield, and James P. Clark, III, Amston, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 25, 1980, Ser. No. 181,323
Int. Cl.³ F01K *23/04;* H02N *4/02*
U.S. Cl. 60—655 **6 Claims**



1. The method of operating an MHD generator, including,

supplying fuel containing sulfur compounds and air to the combustor of the MHD generator,

flowing the products of combustion containing sulfur compounds from the combustor through the channel of the generator to produce electrical energy directly,

supplying potassium compounds to the combustor as seed for the MHD generator,

recovering the K_2SO_4 formed by the potassium seed and sulfur compounds from the products of combustion discharged from the channel,

recycling the K_2SO_4 seed to the combustor,

converting heat energy of the products of combustion from the channel into steam,

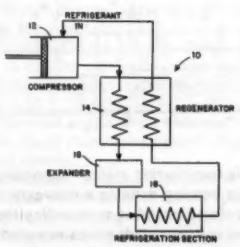
and contacting the products of combustion from the steam generation with a body of lime/limestone to reduce the sulfur compounds of the products of combustion to a desired level.

4,354,355

THALLOUS HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS

William N. Lawless, Westerville, Ohio, assignor to Lake Shore Ceramics, Inc., Dayton, Ohio

Division of Ser. No. 41,039, May 21, 1979, Pat. No. 4,296,149. This application Dec. 5, 1980, Ser. No. 213,448
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **9 Claims**



1. In a cryogenic refrigeration system including a gas compressor means, a regenerator containing a solid heat exchange

material, and a refrigerator section, the improvement comprising:

as said solid heat exchange material a thallous halide compound.

4,354,356

TEMPERATURE-CYCLED COLD TRAP

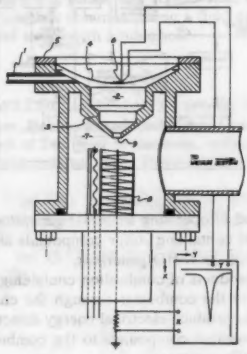
Christopher J. Milner, Northbridge, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed May 4, 1981, Ser. No. 260,288

Claims priority, application Australia, May 2, 1980, PE3389

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **10 Claims**



1. A cold trap for use in a high vacuum system and adapted for rapid and repeated cooling and reheating, comprising a chamber closed at its upper end by a metallic diaphragm of a thickness of not more than 0.002 inches dished inwardly to receive a liquid coolant, an outlet to interconnect the chamber with a high vacuum system, and means to introduce into the diaphragm successive doses of liquid coolant, each dose sufficing by its complete evaporation to keep the trap cold for a period of less than one minute.

4,354,357

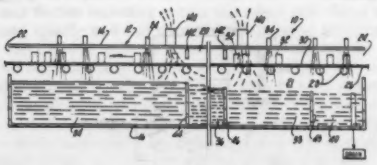
CONVEYOR SYSTEM WITH COOLING MEANS

Robert W. Hofstetter, 14454 Swanee Beach Rd., Fenton, Mich. 48430

Continuation of Ser. No. 90,896, Nov. 5, 1979, Pat. No. 4,261,181. This application Apr. 8, 1981, Ser. No. 252,174

Int. Cl.³ F25B *41/04*

U.S. Cl. 62—216 **6 Claims**



1. An article transporting system comprising:

an elongated housing defining a conveyor track and a substantially closed chamber surrounding the track,

an elongated conveyor belt means mounted in said housing so that a portion of said belt means extends along said track, said belt means having an upper substantially planar surface which forms an article carrying surface;

means for longitudinally moving said belt means along said track from an inlet end of the housing and towards an outlet end of the housing;

at least one fluid reservoir formed in said housing beneath said belt means,

means for spraying water onto articles carried on the article carrying surface,

evaporative cooling means comprising at least one fan having an inlet open to said housing chamber and an outlet open exteriorly of said housing, and

means for sensing the fluid temperature in said reservoir and operable to open fluid flow into said reservoir when the temperature in said fluid reservoir exceeds a predetermined value.

4,354,358

OPEN-CYCLE TYPE AIR CONDITIONER

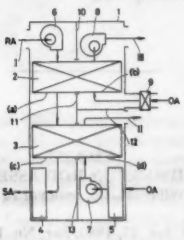
Masao Tatsuoka, and Katsunori Fujimura, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1981, Ser. No. 228,202

Claims priority, application Japan, May 26, 1980, 55-73069[U]; Jul. 29, 1980, 55-104543; Jul. 29, 1980, 55-104544

Int. Cl.³ F25D *23/00*

U.S. Cl. 62—271 **9 Claims**



1. An open-cycle type air conditioner comprising:

a room air passage defined between a room air inlet and a room air outlet;

an outside air passage defined between an outside air inlet and an outside air outlet;

a regenerative air passage defined between a regenerative air inlet and a regenerative air outlet;

a room air blower unit disposed in the room air passage to face to face with the room air inlet;

a rotary latent heat exchanger extending over the room air passage and the regenerative air passage and having side walls in a horizontal direction, said rotary latent heat exchanger being disposed on the downflow side of the regenerative inlet;

a rotary sensible heat exchanger disposed on the downflow side of said rotary latent heat exchanger in the room air passage and extending over the room air passage and the outside air passage, side walls of said rotary sensible heat exchanger being disposed in a horizontal direction and being in communication with the outside air outlet;

a first rotary filter type humidifier disposed on the downflow side of said rotary sensible heat exchanger and in the neighborhood of the room air outlet;

a second rotary filter type humidifier disposed in the outside air passage and in the neighborhood of the outside air inlet;

an outside air blower unit disposed on the downflow side of said second rotary filter type humidifier in the outside air passage; and

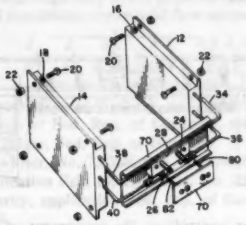
a regenerative air blower unit disposed on the downflow side of said rotary latent heat exchanger in the regenerative air passage and in the neighborhood of the regenerative air outlet.

4,354,359

COLD STORAGE ASSEMBLY

Roger W. Hall, 27706 Nopales, Mission Viejo, Calif. 92690, and John F. Lotterer, III, 23812 Via La Coruna, Mission Viejo, Calif. 92691

Filed Jan. 5, 1981, Ser. No. 222,588
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—299 16 Claims



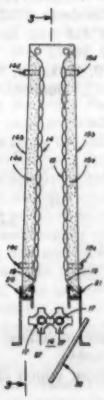
1. In combination:
a pair of cold storage units each comprising an evaporator having an inlet opening and an outlet opening;
a flow control manifold;
flow circuit interconnector means comprising two connectors for completing flow passages from said flow control manifold to each of a respectively associated one of two external refrigerant flow passages; and
flow path completion and cold storage unit separation means for completing a flow path for refrigerant from one of said two connectors through said manifold and through the evaporators of said cold storage units in series and thence through said manifold to the other of said two connectors, and for holding said cold storage units spaced one from the other.

4,354,360

AUTOMATIC MACHINE FOR MAKING CRUSHED ICE

Herbert E. Fiske, P.O. Box 126, Broomfield, Colo. 80020

Filed Oct. 2, 1980, Ser. No. 193,151
Int. Cl.³ F25C *5/02*
U.S. Cl. 62—320 21 Claims



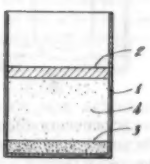
1. In an ice crushing machine of the type comprising a generally upright freezing surface, means for cooling said surface, and means for distributing water over said surface to be frozen thereby forming a layer of ice thereon, an ice breaking mechanism positioned below said surface and comprising a pair of shafts mounted for rotation in opposite directions on spaced generally parallel axes, each of said shafts having a plurality of spaced ice breaking disk-like members arranged in a set along the shaft, the improvement wherein the members of the set on each shaft are interleaved with the members of the set on the other shaft, each of said members having radial arms thereon spaced equally about the axis of the shaft, said arms having a radial length slightly less than the width of the space between the shafts, the radial width of the portions of said members intermediate said arms being less than one half the distance between the shafts whereby when said intermediate portions are between the shafts an axially extending space is provided between said sets of members, means for rotating said shafts at the same rate to move said arms on one shaft toward those on the other shaft on the upper side of said shafts, the forward radially extending edges of said arms on each of said shafts being in axial alignment and being positioned with respect to the adjacent arms of the members on the other shaft to form an upwardly open slot axially of the members during each revolution as the respective arms approach each other during rotation of said shafts, means for heating said surface to release a layer of ice therefrom whereby the released ice falls against said members and upon formation of said slot and further rotation of the members the portion of ice in the slot is broken away and separated from the remaining released ice and is broken into pieces of a predetermined range of sizes by interaction of the interleaved members and on continued rotation of the members is moved downwardly and falls from said ice breaking mechanism, the interleaved portions of said sets of members after separation of the portion of ice holding the remaining ice above said members whereby said ice remains against the members while the next slot is formed and filled and another portion of the ice is then broken away, such breaking continuing to produce successive portions of ice during rotation of said shafts until all the released ice has been broken.

4,354,361

MACHINE FOR RECOVERING ENERGY BY MEANS OF A CYCLIC THERMODYNAMIC PROCESS

Baltzar C. von Platen, Solomon Smith's Vag, Ystad, Sweden (27 100)

Filed Jul. 22, 1981, Ser. No. 285,761
Int. Cl.³ F25B *3/00*
U.S. Cl. 62—467 R 16 Claims



1. In a method of transferring heat energy by means of a cyclic thermodynamic process comprising the steps of:
providing axis of rotation,
providing a plurality of rigid annular containers positioned adjacent one to another concentric about said axis and located at progressively greater radial distances from the axis of rotation,
providing good thermal conductivity between said chambers,
providing in each of said chambers a mixture of propane and an inert gas sealed therein,
mounting said concentric annular chambers in an enclosing hermetically sealed static chamber closely spaced from said annular chambers for defining a narrow gap therebetween,
filling said narrow gap with hydrogen,
rotating said concentric annular containers at high speed about said axis,
allowing heat energy to enter the innermost of said concentric annular chambers, and

allowing heat energy to be released from the outermost of said chambers across said gap,

the improvement comprising:

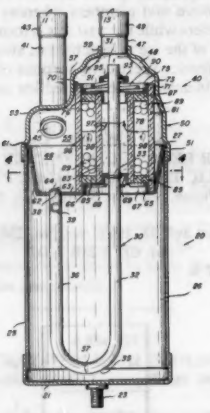
providing means for regulating the quantity of heat energy allowed to enter said innermost annular concentric chamber so that the temperature in the area where said heat energy enters said innermost chamber is prevented from rising above a predetermined value.

4,354,362

INTEGRAL SUCTION LINE ACCUMULATOR/FILTER-DRIER

Ernest W. Schumacher, DeSoto, Tex., and Stephen E. Evans, Ellicott City, Md., assignors to Virginia Chemicals, Inc., Portsmouth, Va.

Filed Nov. 7, 1980, Ser. No. 204,807
Int. Cl.³ F25B *43/00*
U.S. Cl. 62—474 **34 Claims**



1. A low-pressure accumulator/filter-drier for installation in upright position in an air conditioning system between the evaporator and compressor thereof, which comprises, in sealed combination:

A. a filter-drier, comprising an inlet plenum chamber, a discharge plenum chamber, and a filter-drier assembly which is surrounded by said inlet plenum chamber and which comprises:

(1) an inner cylindrical filter cartridge,

(2) an outer cylindrical filter cartridge, and

(3) an annular dessicant bed which is disposed between said cartridges; and

B. an accumulator, comprising:

(1) an accumulator plenum chamber, for accumulating liquid and receiving vapor, which is disposed beneath said filter-drier, and

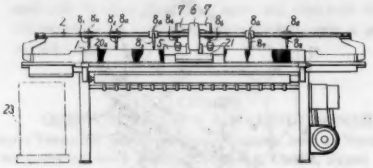
(2) a pickup tube having a discharge portion which is coaxially aligned with said filter-drier assembly and is radially spaced from said inner filter cartridge to form therebetween an annular vapor discharge channel which is connected to said discharge plenum chamber.

4,354,363

MEANS FOR CONTROLLING THE MOVEMENT OF YARN CARRIERS ALONG WITH A CARRIAGE IN FLAT KNITTING MACHINES

Hideo Inoue, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

Filed Dec. 4, 1980, Ser. No. 212,910
Claims priority, application Japan, Dec. 10, 1979, 54-159976
Int. Cl.³ D04B *15/52*
U.S. Cl. 66—128 **2 Claims**



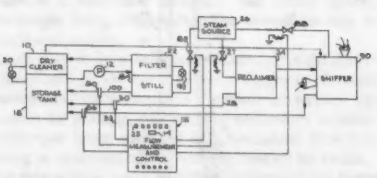
1. Means for controlling the movement of yarn carriers along with a carriage in a flat knitting machine, comprising a trick location detector mounted on the carriage for detecting varying positions of the carriage on a needle bed during its movement thereon, each such position expressed in terms of the number of tricks or of needles counted from one or the other tricked end of the needle bed, a plurality of solenoids arranged in a plunger box on the carriage for individually controlling coupling plungers provided in the plunger box in the same number as the solenoids, each coupling plunger slidable to an operative position relative to one of the yarn carriers on carrier guide rails for engagement therewith, each of said solenoids connected to a solenoid drive circuit, trick position setting means adapted to memorize predetermined signalling positions, each expressed in terms of the number of tricks counted from one or the other tricked end of the needle bed, for selectively energizing and deenergizing the solenoids, and a control unit for controlling the solenoid drive circuit through the operation of values memorized by the trick position setting means and those detected by the trick location detector.

4,354,364

DRY-CLEANING SYSTEM

H. Dennis Holder, 16052 Wedgeworth Dr., Hacienda Heights, Calif. 91745; Herb L. Goodman, 17321 Ave. de la Herradura, and Michael Favish, 17315 Ave. de la Herradura, both of Pacific Palisades, Calif. 90272

Filed Mar. 10, 1981, Ser. No. 242,274
Int. Cl.³ D06F *43/08*
U.S. Cl. 68—18 R **8 Claims**



1. A dry-cleaning system, including:

cleaning fluid storage means;

at least one mdoule, from which cleaning liquid is to be reclaimed;

a return line from said at least one module to said storage means;

a flowmeter connected in said return line and having first output terminals which exhibit changes in electrical conditions across said first output terminals in response to a flow of cleaning fluid through said return line;

a source of steam;

a steam line coupled between said source of steam and said at least one module;

a solenoid-operated valve connected in said steam line for controlling the flow of steam through said steam line to said at least one module, said solenoid-operated valve having a pair of control terminals; and,

flow measurement and control means coupled between said first output terminals and said control terminals for opening said solenoid-operated valve and permitting steam flow therethrough only in the presence of said changes in electrical conditions across said first output terminals.

4,354,365

PERMUTATION LOCK

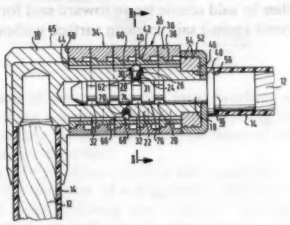
Siegfried Mayer, Münster-Wolbeck, and Ludger Henrichmann, Münster, both of Fed. Rep. of Germany, assignors to Aug. Winkhaus, Telgte, Fed. Rep. of Germany

Continuation of Ser. No. 73,208, Sep. 7, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 236,020

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840098

Int. Cl.³ E05B *37/02, 37/06*

U.S. Cl. 70—30 **14 Claims**



1. Permutation lock comprising a lock housing having a first end and a second end spaced from said first end, said housing having an axially elongated bore therein extending from the first end toward the second end thereof and a plurality of openings spaced apart in the axial direction of said bore and extending in the radial direction relative to the axis of said bore from the inner surface to the outer surface of said housing, a locking pin movably displaceable in each of said openings, a plurality of setting wheels rotatably mounted on the outer surface of said housing through which said bore extends for movement around the axis of said bore, said setting wheels being arranged in side-by-side relation along the axial direction of said bore and each being rotatable relative to the others, said setting wheels having inwardly facing release recesses for receiving said locking pins, an axially extending closing bolt insertable into said bore along the axis thereof through the first end of said housing and having a plurality of locking recesses formed therein, said locking pins being movably displaceable into the recesses in said locking bolt, said setting wheels being rotatable into a release position representing the combination of said lock wherein said locking pins are released from the recesses in said closing bolt and move radially outwardly into said release recesses and said closing bolt is removable from and insertable into said bore and said wheels being rotatable from the release position for movably displacing said locking pins into the locking recesses in said closing bolt so that said closing bolt is secured within said bore, wherein the improvement comprises that each said setting wheel comprises a radially inner ring having said release recess therein and a radially outer ring located radially outwardly from said inner ring, and said inner ring and outer ring being lockable for rotatable movement as a unit and being displaceable from locked engagement for rotatable movement one relative to the other, said outer ring being axially displaceable relative to said inner ring from a first position wherein said outer ring operates in locked engagement with said inner ring to a second position where said outer ring can be rotated relative to said inner ring for changing the part of the combination of the lock associated with said setting wheel of which said outer ring forms a part, releasable securing means being provided for securing said outer ring in said first position, said securing means comprising a securing member provided on said closing bolt, said securing member securing said outer ring in said first position, when said closing bolt is locked in said bore, such that said outer ring is rotatable with respect to said inner ring only when said closing bolt is at least partially removed from said bore.

4,354,366

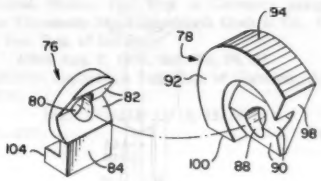
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Kidde, Inc. (Presto Lock Company Division), Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,490

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—312 **11 Claims**



1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift mechanism for moving said elements axially, said shift mechanism including an actuator mounted for rotation about said axis, means providing a camming action between said actuator and said elements for causing said shift mechanism to move said elements axially responsive to rotary motion of said actuator in one direction, and means for restricting the rotary motion of the actuator to forward and reverse motion between opposed extreme positions, the combination elements in one extreme position of the actuator being in coupling engagement with the cooperating components and in the other extreme position of the actuator being out of coupling engagement with the cooperating components.

4,354,367

COMBINATION LOCK FOR ATTACHE CASES AND SIMILAR ARTICLES

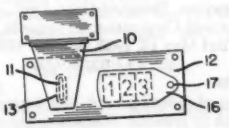
Philippe Wahl, 89A, route de Florissant, 1206 Geneve, Switzerland

Filed May 2, 1979, Ser. No. 35,281

Claims priority, application Switzerland, May 2, 1978, 4728/78

Int. Cl.³ E05B *15/16*

U.S. Cl. 70—333 A **4 Claims**



1. A combination lock for attache cases and the like comprising, a clasp having a movable clasp element, the lock having a plurality of movable elements having digits thereon for setting a combination for selectively locking the lock, said clasp element being in a locking position when the combination lock is

locked, a mask biased to a first of two rest positions, said first position comprising a position in which the mask conceals the digits and blocks the movable element from moving to a position in which the clasp is open, and a second of said two positions comprising a position in which said mask exposes said digits to view and unmasks the clasp element.

4,354,368

KEY HOLDER

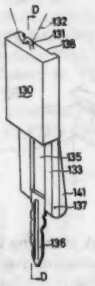
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,360

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **6 Claims**



1. A pendant type key holder comprising:

a body having an opening formed therein;

a slide member slidably mounted in said opening in said body, said slide member including a first groove formed therein and said slide member being movable to a position inside or outside said body;

a key pivotably mounted to said slide member and movable between a non-operating position in which the key is disposed within said first groove of said slide member and an operating position in which the key is disposed outside of said first groove;

at least one second groove formed in said slide member adjacent said body and elongated in the direction of movement of said slide member;

said body including at least one flange member projected within said second groove; and

said slide member having a leg member which engages said flange member upon sliding of said slide member outside said body and a convex portion of the slide member which engages said body near an entrance of said opening upon sliding of said slide member inside said body.

4,354,369

METHOD FOR SUPERPLASTIC FORMING

C. Howard Hamilton, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1980, Ser. No. 150,471

Int. Cl.³ B21B *9/00*

U.S. Cl. 72—38 **7 Claims**

1. A method of reducing cavitation during superplastically forming a blank of material, comprising the steps of:

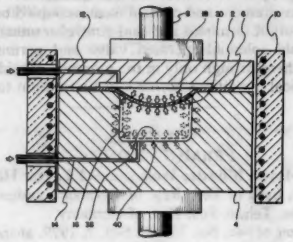
providing a blank of material which exhibits an effective value of strain rate sensitivity at a forming temperature;

providing a die having a forming surface;

positioning said blank in said die opposite said forming surface;

holding said blank at said forming temperature so that said material exhibits said effective value of strain rate sensitivity;

applying positive pressure concurrently to both sides of said blank sufficient to prevent the formation of voids in said material; and



increasing said positive pressure on the side of said blank farthest from said forming surface to develop tensile strain in said material at a rate which provides said effective value of strain rate sensitivity, whereby said blank stretches by said tensile strain toward said forming surface and forms against said forming surface without cavitation.

4,354,370

METHOD FOR DEEP DRAWING SHEET METAL

Myron E. Ullman, Jr., Canfield, Ohio, assignor to Kessler Products Co., Inc., Youngstown, Ohio

Filed Sep. 2, 1980, Ser. No. 183,308

Int. Cl.³ B21D *22/20*

U.S. Cl. 72—42 **19 Claims**

1. A method of drawing an article from a generally flat metal blank, comprising:

(a) providing a press including mating drawing tools such as a punch and a die, these tools normally being positioned at opposite ends of a travel path along which at least one of the tools is movable relative to the other during a drawing process;

(b) positioning pairs of plastic sheets and a relatively flat metal blank having first and second opposed surfaces transverse to the travel path with:

(i) each of the opposed surfaces of the blank facing toward a separate one of the tools;

(ii) the plastic sheets including first and second pairs of distinct plastic sheets;

(iii) the first pair of sheets loosely overlying each other and being positioned in overlying relationship with the first surface at a location between the first surface and one of the tools; and

(iv) the second pair of sheets loosely overlying each other and being positioned in overlying relationship with the second surface at a location between the second surface and the other of the tools; and

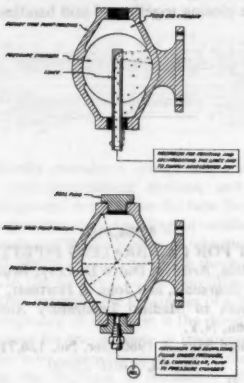
(c) moving at least one of the tools along the travel path relatively toward the other tool to effect drawing of the blank while maintaining the sheet pairs at locations between the tools and the blank to serve as lubricants during the drawing of the blank with the sheets of each pair being free to slide relative to each other to enhance lubrication.

4,354,371

METHOD OF PRESTRESSING THE WORKING SURFACES OF PRESSURE CHAMBERS OR CYLINDERS

Daniel E. Johnson, Dallas, Tex., assignor to Metal Improvement Company, Inc., Paramus, N.J.

Filed Oct. 27, 1980, Ser. No. 200,767
Int. Cl.³ C21D 7/06
U.S. Cl. 72—53 6 Claims



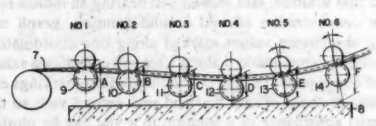
1. A method of prestressing the inner working surfaces of the walls forming a pressure chamber comprising the steps of:
(a) shot peening the inner working surfaces of said walls of said pressure chamber;
(b) sealing said pressure chamber and applying a fluid pressure in the chamber of a magnitude sufficient to deform the said walls defining said chamber beyond the yield strength but not sufficient to cause fracture of said walls, and
(c) releasing such applied fluid pressure and unsealing said pressure chamber.

4,354,372

METHOD AND APPARATUS FOR COLD ROLL FORMING METAL STRIP

Takesi Inoue, Yasugi, and Kuniaki Okada, Matsue, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,895
Claims priority, application Japan, Mar. 8, 1978, 53-26386
Int. Cl.³ B21B 15/00; B21D 5/14
U.S. Cl. 72—177 17 Claims



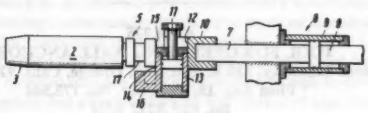
1. A method of cold roll forming an automotive vehicle bumper comprising:
grinding and washing a metal strip;
forming said metal strip into a shaped strip, while advancing the metal strip, together with changing gradually the height of a point of contact between metal strip to be formed and rolls of each of a plurality of cold forming roll stands so as to inhibit elongation deformation of marginal portions of the metal strip which constitute the edge portions of a product;
curving said shaped strip longitudinally thereof with a predetermined curvature in such a manner that edge portions of said strip are on a concave side of the curvature and a web portion is on a convex side thereof, together with changing gradually the height of the point of contact between said roll formed shaped strip and rolls of each cold forming roll stand in a reverse direction to the forming step and disposing said rolls of each cold forming roll stand for carrying out at least part of said second step for curving the product longitudinally so as to be passed through substantially an extension of a line connecting together the center axes of the shafts of said confronting rolls to a center of the curvature of the product so that the shaping force may be directed toward the center of the curvature of the product when cold roll forming is effected, while simultaneously effecting roll forming from multiple directions at least as part of the curving step; and
the roll formed product being cut to a predetermined length.

4,354,373

AXIAL ADJUSTMENT DEVICE FOR TAPERED INTERMEDIATE ROLLS IN A CLUSTERED MILL STAND

Peter Rheinthal, Hemer, Fed. Rep. of Germany, assignor to Sundwiger Eisenhutte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,763
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835514
Int. Cl.³ B21B 31/18, 35/14
U.S. Cl. 72—247 7 Claims



1. An axial adjustment device for tapered intermediate rolls each having a roll neck at one end thereof and a pivot bearing on said roll neck in a cluster mill stand, comprising:
at least one axial adjusting device operable in an axial direction of the intermediate rolls including a shift bar for axially shifting said intermediate rolls;
engagement means on said axial adjusting device for engaging said pivot bearing;
said engagement means including means operable in a direction transverse to an axial direction of said axial adjusting device and effective to positively fit said pivot bearing and to at least partly support said one end of said intermediate roll, the positive fit being effective to provide concerted axial movement of said intermediate roll and said axial adjusting device; and
said engagement means having a selectable position displaced in said transverse direction wherein it releases said pivot bearing and permits axial motion of said intermediate roll independently of said axial adjusting device.

4,354,374

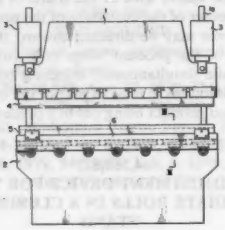
BENDING PRESS

Hideaki Deguchi, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 216,784
Claims priority, application Japan, Dec. 24, 1979, 54-177711[U]
Int. Cl.³ B21D 7/06
U.S. Cl. 72—389 1 Claim

1. A press for bending a sheet metal, comprising:
a frame of said press;
a stationary first support member fixedly secured to said frame;
a second support member vertically movable on said frame toward and away from said first support member;
a punch secured to said second support member;

a table mounted on said first support member;
a die secured to said table; and
a plurality of adjusting means disposed between said first support member and said table for adjusting the height of said table, each of said adjusting means comprising a first wedged member fixedly secured to said table, a second



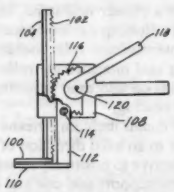
wedged member laterally movable relative to said first support member, said first and second wedged members being arranged one upon the other, a rack fixedly secured to said second wedged member and a pinion engageable with said rack, said pinion having means formed therein open to the front face of said first support member for receiving a tool for turning said means.

4,354,375

TOOL FOR OPERATING WALL ANCHORS

Joseph Lesowsky, 335 E. Taft Ave., Orange, Calif. 92665

Filed Aug. 15, 1980, Ser. No. 178,544
Int. Cl.³ B21J *9/18*
U.S. Cl. 72—449 **3 Claims**



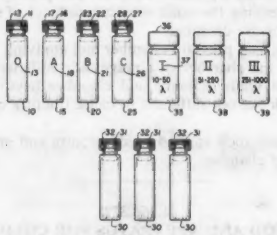
1. A tool for deforming the tubular body of a flanged wall anchor having a headed bolt comprising, in combination:
an upstanding base member;
a first notched jaw member secured to the lower end of said base member;
a bar;
a second notched jaw member parallel to and coextensive with said first jaw member,
said second jaw member being secured to one end of said bar;
a frame member fixed to the other end of said base member and having an integral handle parallel to said jaw members,
said bar being slidable in said frame member;
a movable handle supported by said frame member for pivotal movement toward and away from said integral handle,
said handles being adapted to be gripped by hand to force them together;
and means coupling said one end of said movable handle to said bar and operable on movement of said movable handle away from and toward said integral handle to effect sliding movement of said bar in said frame member, thereby to effect movement of said second jaw member toward and away from said first jaw member,
said jaw members being adapted for insertion insertion between the bolt head and flange of the wall anchor to straddle the bolt with the notches in the jaw members and to thrust the bolt head and flange axially apart and effect deformation of the body of the anchor,
said coupling means being characterized by a mechanical advantage that permits such deformation with a single closing together of said handles.

4,354,376

KIT FOR CALIBRATING PIPETTES

Walter Greenfield, Ardsley; Didya D. Levy, Brooklyn; Richard E. Scordato, Scarsdale, and John J. Hartnett, Yonkers, all of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,718
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—1 H **14 Claims**



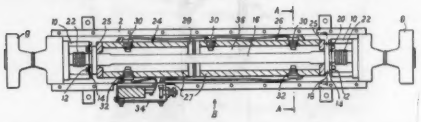
1. A pipette calibration kit comprising a first vial containing a first solution comprising a solute and a solvent having a measurable first predetermined concentration, said first vial bearing an indicia related to that concentration, a second vial containing a second solution similar to said first solution but having a measurable second concentration different from that of said first solution, said second vial bearing an indicia related to the concentration of said second solution, graph means having absorbance values marked along one coordinate axis and volume values marked along a second coordinate axis, said second coordinate axis also containing indicia markings corresponding to those of said first and said second vials so that a measured absorbance of a solution in a vial can be plotted in alignment with the graph means indicia markings corresponding to the indicia on the vial and a calibration curve drawn, a bottle containing a reagent solution similar to said first solution but having a predetermined concentration greater than that of said first and said second solutions, and a vial containing a predetermined volume of a diluent comprising the same solvent as in said first solution, whereby a part of said diluent can be removed from said diluent vial by a pipette that is to be calibrated and replaced by an equal part of the reagent solution pipetted from said reagent bottle and dispensed into the diluent vial by the pipette being calibrated to provide a solution having a measurable absorbance value from which the volume capacity of the pipette being calibrated can be determined from a calibration curve plotted on said graph means.

4,354,377

FLUID DENSITY TRANSDUCER

James W. Stansfeld, Alton, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Nov. 4, 1980, Ser. No. 203,841
Claims priority, application United Kingdom, Nov. 6, 1979, 7938367
Int. Cl.³ G01N 9/00
U.S. Cl. 73—32 A 7 Claims



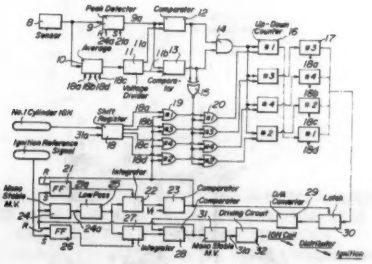
1. A fluid density transducer comprising a tube extending between two node-determining devices, and an electrical transducer arrangement coupling to the tube for exciting natural transverse vibrations and providing an oscillatory electrical signal representative of the frequency of vibration, wherein the tube has a small degree of ellipticity with the minor axis of the ellipse parallel to the direction of the vibration, the ellipticity being so small that the principle parameter of a fluid in the tube affecting the frequency of vibration is the density of the fluid, but being sufficient for the increase in frequency arising from stiffening of the tube when the pressure of the fluid rises to compensate for the decrease in frequency arising from increased circumferential stress when the pressure of the fluid rises.

4,354,378

KNOCK DETECTING DEVICE

Katsunori Oshiage, and Nobuji Manaka, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 18, 1980, Ser. No. 141,599
Claims priority, application Japan, Apr. 21, 1979, 54/49468
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 7 Claims



1. A knock detecting device for a multiple cylinder engine, comprising:

a sensor for detecting vibrations of the body of the engine and producing output signals indicative thereof;

a plurality of averaging circuits, each of said averaging circuits corresponding to a separate one of said cylinders;

a first switch means for distributing output signals from said sensor developed in association with individual cylinders to said corresponding averaging circuits in synchronism with ignitions of said individual cylinders;

a second switch means for selecting output signals from said corresponding averaging circuits in synchronism with said ignitions thereby providing individual corresponding reference signals for each of said cylinders; and

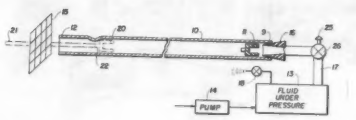
a detecting means for detecting a knocking state of each of said cylinders in dependence on said corresponding reference signal for each cylinder.

4,354,379

METHODS AND APPARATUS FOR TESTING ROUNDNESS AND STRAIGHTNESS OF PIPES AND TUBINGS

Robert M. Miner, 1855 Glendale, Casper, Wyo. 82601

Filed Aug. 27, 1980, Ser. No. 181,948
Int. Cl.³ G01B 5/12
U.S. Cl. 73—37 17 Claims



1. The method of testing pipe sections for roundness, straightness and internal surface defects, comprising the steps of:

inserting into one end of a section of pipe a light weight cylindrical drift member of a circumference within close tolerance to the internal pipe circumference specification and having a substantially friction free outer surface structure for contacting the inner pipe wall,

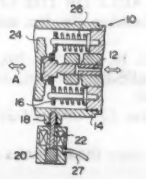
and impacting said cylindrical member with sufficient fluid flow directed into one end of the section of pipe to move the cylindrical member through the section of pipe from one end to pass out the other end thereby to indicate whether the pipe is within specification tolerance without burrs, indentations, out-of-round or straightness conditions tending to impede the transit of the member along the pipe length.

4,354,380

FUEL INJECTION PUMP OPERATING CONDITION DETECTOR

Yoichi Murata, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 1, 1980, Ser. No. 211,774
Claims priority, application Japan, Jul. 2, 1979, 54-84304
Int. Cl.³ G01M 15/00
U.S. Cl. 73—119 A 6 Claims



1. A fuel injection pump operating condition detector wherein fuel is pressure fed by a reciprocating plunger, comprising an unpenetrated mount formed on a pump housing of the fuel injection pump adjacent the plunger or a reciprocating part operationally associated with the plunger and an electromagnetic pickup, the forward end of a core of which is fixed to said mount.

4,354,381

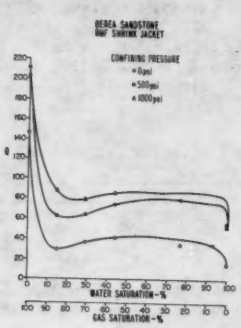
SONIC ATTENUATING METHOD FOR DISTINGUISHING BETWEEN OIL, WATER AND GAS

William L. Medlin; Lucien Masse, both of Dallas, and James H. Sexton, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,477

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—151 **14 Claims**



1. A method for predicting the possible fluid content of a zone of reservoir material disposed at a known depth, comprising the steps of:

(a) sampling said material to determine at least its resonance behavior type, if known; or if not known, determining its resonance behavior type by:

(i) subjecting samples of said material to pressures comparable to to the overburden pressures found at said depth of said zone,

(ii) saturating said samples of said material with differing selected amounts of at least one fluid suspected of being present in said zone within the range of said differing selected amounts; and

(iii) resonance testing said samples to determine the behavior of the resonance loss factor (Q value) while containing such differing selected amounts of said at least one fluid;

(b) estimating the resonance loss factor (Q value) of said reservoir zone; and

(c) positively correlating the resonance loss factor (Q value) of said reservoir zone to the resonance loss factors of said resonance behavior type to predict the possible fluid content of said zone.

4,354,382

DEVICE FOR DETERMINING THE LEVEL OF MELT IN A LADLE OR THE LIKE

Hans Hägglund, Örsundsbro, Sweden, assignor to AB Rescon, Sweden

Filed Jun. 10, 1980, Ser. No. 158,296

Claims priority, application Sweden, Jun. 11, 1979, 790576; Sep. 20, 1979, 7907816

Int. Cl.³ G01F *23/26*

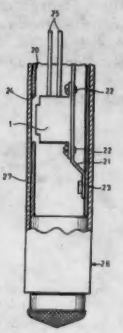
U.S. Cl. 73—290 R **3 Claims**

1. Device for determing the level of a melt in a ladle or the like comprising,

a lance, one end of which comprises a tubular wall portion which is adapted to be submerged into said melt, the surface of said wall portion having at least one aperture therethrough;

at least one non-contact sensor mounted internal of said lance upon the surface of said wall portion, each sensor being positioned opposite an aperture;

means attached to each sensor for electrical connection to equipment which receives signals coming from each sensor; and,



a sleeve of heat resistant, electrically non-conducting material which encloses said tubular wall portion and covers each aperture.

4,354,383

METHOD OF AND DEVICE FOR MEASURING THE AMOUNT OF LIQUID FUEL IN A TANK

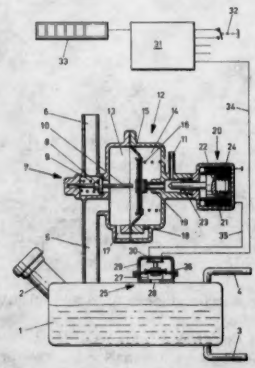
Günter Härtel, Neuss, Fed. Rep. of Germany, assignor to Bosch & Pierburg System oHG, Neuss, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,679

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2937966

Int. Cl.³ G01F *23/14*

U.S. Cl. 73—290 B **20 Claims**



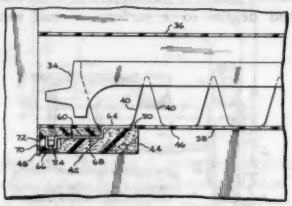
1. A method of measuring the amount of liquid fuel in a ventilated fuel tank, said method comprising the steps of stopping temporarily the ventilation from the tank; removing from said unventilated tank an amount of gas; and measuring a quantity indicative of the change in the state of said gas in said tank to provide an indirect measurement of the amount of fuel in said tank, said gas is removed from said tank at a constant volumetric flow rate and said quantity measured comprises the time taken for a predetermined alteration in pressure of said gas in said tank to occur.

4,354,384

VISUAL DEVICE FOR ICE CUBE TRAYS

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 2, 1980, Ser. No. 182,884
Int. Cl.³ F25B 49/00; G01K 3/00
U.S. Cl. 374—134 7 Claims



1. A visual device in the freezer compartment of a refrigerator to indicate when water in an ice cube tray is frozen comprising:

a stationary thermal insulated sectioned base in close proximity to a bottom portion of the ice cube tray;

a thermometer located remote from said portion of the ice cube tray and having a bulb containing liquid and a connecting capillary tube for a liquid column, said thermometer being embedded in the insulated base;

a thermal conductive member in heat transfer relationship between said portion of the ice piece tray and the thermometer bulb, said member having a portion geometrically formed to enclose a substantial portion of the thermometer bulb; and

visual means provided in a selected portion in said base and relative to the liquid column in the capillary tube so as to provide access for indicating on the thermometer when water in the ice piece tray is frozen.

4,354,385

THERMOMETRIC COMPOSITIONS FOR MEASURING AND INDICATING LOW TEMPERATURES AND RELATED THERMOMETRIC DEVICES

Mario Fraschini, Via Valcuvia, N. 61, 21033 Cittiglio Varese, Italy

Filed Dec. 5, 1980, Ser. No. 213,644
Claims priority, application Italy, Feb. 6, 1980, 19716 A/80
Int. Cl.³ C09K 3/34; G01K 11/16, 11/18
U.S. Cl. 374—162 8 Claims

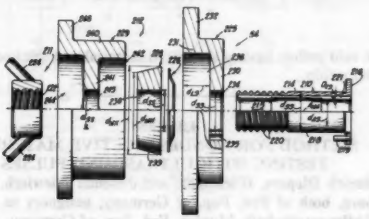
1. A thermometric composition of mesomorphic cholesteric substances suitable for the measurement and indication of low temperatures in the range of 0° C. to −30° C., said composition having a color change temperature within said range at which said composition changes color, said composition comprising a quaternary mixture of cholesteryl nonanoate, oleyl cholesteryl carbonate, cholesteryl chloride and cholesteryl acetate, said color change temperature being adjustable by varying the amount of cholesteryl acetate relative to said cholesteryl nonanoate, oleyl cholesteryl carbonate and cholesteryl chloride.

4,354,386

TIRE ASSEMBLY MOUNTING ADAPTER

Robert P. Newton, Tampa, Fla., assignor to Autodynamics, Inc., Tampa, Fla.

Continuation of Ser. No. 2,744, Jan. 11, 1979, Pat. No. 4,229,977, which is a division of Ser. No. 709,544, Jul. 28, 1976, Pat. No. 4,139,041. This application Oct. 28, 1980, Ser. No. 201,526
Int. Cl.³ G01M 1/06
U.S. Cl. 73—487 8 Claims



1. A tire assembly mounting adapter with an adapter central axis for selectively mounting, on a drive spindle having a prescribed outside spindle diameter, a tire assembly having an inflated pneumatic tire mounted on a vehicular wheel rim with an effective axis of rotation comprising:

a support member defining a spindle receiving passage therethrough concentric about said adapter central axis and having a prescribed passage diameter substantially equal to the spindle diameter so that the drive spindle is slidably receivable therethrough to removably mount said adapter on the drive spindle with the adapter central axis coinciding with the spindle axis;

tire assembly positioning means for operatively and removably mounting the tire assembly on said support member independently of the drive spindle so that the effective axis of rotation of the tire assembly coincides with the adapter central axis and said tire assembly is rotatably fixed with respect to said tire assembly positioning means;

engaging means interconnecting said tire assembly positioning means with said support member while the tire assembly is mounted on said adapter for maintaining a fixed rotational position between said tire assembly positioning means and said support member and thus the tire assembly relative to said support member; and

keying means positively interconnecting the drive spindle and said support member when said adapter is slidably carried on the drive spindle so that the tire is positively rotated by the drive spindle about the spindle axis with the effective axis of rotation of the tire coinciding with the spindle axis.

4,354,387

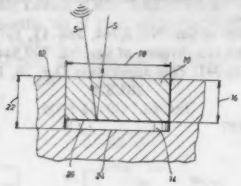
APPARATUS IDENTIFICATION SYSTEM

William R. Jones, and Edgar F. Harrington, both of Houston, Tex., assignors to National Identification Bureau Inc., Houston, Tex.

Continuation of Ser. No. 136,388, Apr. 1, 1980, Pat. No. 4,309,904. This application Aug. 31, 1981, Ser. No. 298,152
Int. Cl.³ G01N 29/00
U.S. Cl. 73—597 10 Claims

1. A system for coding and identifying an article, comprising a plurality of pellets selectively secured to the article such that

they may be identified by a time measurement of traveling waves having known characteristics passing through the pellets, said pellets having a selected material and thickness interrelationship.



4,354,388

METHOD FOR NONDESTRUCTIVE MATERIAL TESTING WITH ULTRASOUND PULSES

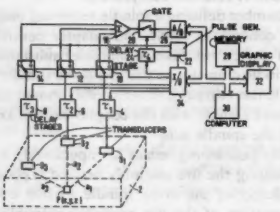
Heinrich Diepers, Höchstadt, and Joachim Niewisch, Nuremburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,330

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926173

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—612 **11 Claims**



1. In a method for nondestructive material testing with ultrasound pulses which are introduced into a workpiece under test and are reflected by a fault, the position of which is derived from the propagation time of the ultrasound pulses and the echo pulses, the improvement comprising picking up the ultrasonic echo pulse reflected in the workpiece at the fault at three different points of the surface, said three points spaced from each other in such a manner so as to define only one single plane; electronically adding the electronic echo pulses in phase, each with a delay depending on its respective travel time; and feeding the resulting sum to an electronic memory through an electronic time window.

4,354,389

VAPOR PRESSURE SENSOR AND FLOW MEASURING DEVICES

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

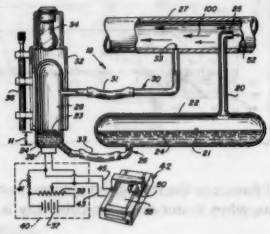
Filed Dec. 3, 1979, Ser. No. 99,346

Int. Cl.³ G01L *9/00*

U.S. Cl. 73—749 **5 Claims**

1. A device for measuring differences in pressure comprising: a reservoir, a measuring cell, a first liquid in said reservoir, a second liquid in said measuring cell, a transferring means providing liquid communication between said reservoir and said measuring cell, a first means for sensing a first pressure, a second means for sensing a second pressure, a detector means which responds to a modulated signal by producing a response signal of voltage potential, and a signal source for producing a signal of electromagnetic radiation; wherein

said reservoir is connected to said measuring cell by said transferring means in such a manner that at least a portion of said first liquid and said second liquid contained in said reservoir and said measuring cell, respectively, can flow therebetween, said first means is connected to said reservoir so that a first pressure impinging upon said first means is transmitted in a substantially undiminished degree to a surface of said first liquid, said second means is attached to said measuring cell so that a second pressure impinging on said second means is transmitted in a substantially undiminished degree to a surface of said second liquid;



whereby changes in relative value between said first pressure and said second pressure produces changes in an amount of said second liquid in said measuring cell; said signal from said signal source is adapted to interact with said second liquid so that a characteristic of intensity of said signal is modulated to produce a modulated signal, wherein said characteristic varies with said amount of said second liquid, said detector means is adapted to respond to said characteristic of said modulated signal by producing a response signal that is changed in an amount related to changes in said characteristic of said modulated signal.

4,354,390

TRACTOR PULL SLED

Robert A. Chamberlain, Custar, Ohio, assignor to Northwestern Ohio Tractor Pullers Assoc., Bowling Green, Ohio

Filed Jun. 23, 1980, Ser. No. 162,083

Int. Cl.³ G01I *5/13*

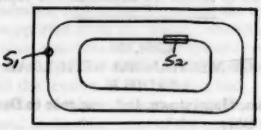
U.S. Cl. 73—862.03 **4 Claims**

1. A tractor pull sled comprising a frame; ground engaging means including front and rear wheels adapted for relatively low frictional movement over the ground; spring suspension means between said frame and said ground engaging means, whereby the weight of the frame is initially supported through said suspension means by said ground engaging means; a skid shiftably mounted on said frame and adapted for relatively high frictional ground engagement; and expansible means between said frame and said skid responsive to the movement of said ground engaging means for shifting said frame relative to said skid and said ground engaging means to progressively transfer the weight of said frame from said ground engaging means to said skid at a rate of which is a function of the distance of forward travel of said sled, wherein said suspension means permits relative vertical movement of said frame and said rear wheels such that said rear wheels are in continuous ground engagement.

4,354,391
SAMPLING METHOD

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed Dec. 24, 1980, Ser. No. 219,919
Int. Cl.³ G01N *1/04*
U.S. Cl. 73—863.11 17 Claims



1. A method for sampling a pyrometallurgically treated material for the analysis by a designated analytical instrument of a selected chemical element having an average initial elemental concentration c_o in the material before the treatment, said treatment causing the element to segregate and to become nonuniformly distributed in the material according to a fixed segregation pattern so that in a first portion of the material the elemental concentration is above c_o while in a second portion of the material the elemental concentration is below c_o, the first and second portions joining together along an interface where the elemental concentration substantially equals c_o, comprising:

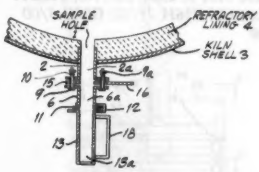
locating the interface; and

taking a sample of the treated material in a specified shape and size and oriented and spaced relative to the interface so that the sample as a whole has substantially the same elemental concentration as c_o.

4,354,392
ROTARY KILN MATERIAL SAMPLING SYSTEM

Thomas W. Goodell, Harriman, and Forrest E. Clark, Lenoir City, both of Tenn., assignors to The Direct Reduction Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,259
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—863.86 8 Claims



1. Apparatus for removing samples of materials being processed in a rotary kiln comprising:

first means passing through the kiln shell for defining a first chamber communicating with the kiln interior;

second means connected at one end to said first means exteriorly of the kiln shell for defining a second chamber communicating with said first chamber;

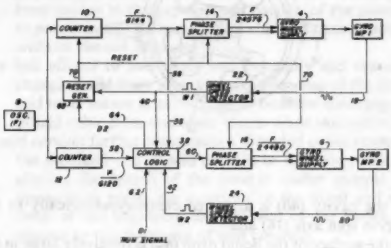
gate means disposed between said first and second means and movable between an open position and a closed position for respectively opening and closing off the communication between said first and second chambers; and

receptacle means removably connected to the other end of said means for receiving material samples passing through said first and second chambers from the kiln interior when said gate means is in said open position.

4,354,393
PHASE LOCKED GYROSCOPE WHEEL SUPPLY FOR SYNCHRONOUS HYSTERESIS MOTOR

Robert H. Acker, Packanack Lake; Frank L. Rosen, Parsippany, and Donald J. Weber, North Caldwell, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 30, 1980, Ser. No. 164,551
Int. Cl.³ G01C *19/10*
U.S. Cl. 74—5.37 13 Claims



1. The method of synchronizing two gyroscopes, one of which is driven by a synchronous motor from an AC voltage source at a first frequency and the other of which is driven by an AC voltage source at a second frequency which is higher than the first, each gyroscope having a pick-off which generates a signal relating the position of the gyroscope wheel to the gyroscope support, comprising the steps of:

bringing the first motor to speed by driving it at the first frequency and bringing the other motor to speed by driving it at the second frequency;

comparing the relative positions of the gyroscope wheels by comparing the signals generated by each pick-off;

and, when the pick-off signals coincide, switching the drive for the gyroscope operating at the second frequency from the source having the higher frequency to the source providing the first frequency.

10. The method of phase-locking a gyroscope wheel at start-up, the gyroscope wheel carried in a support and driven by a synchronous motor powered from an AC voltage supply at a given frequency, comprising the steps of:

driving the motor to bring it up to speed;

generating a signal which is proportional in phase to the position of the flywheel relative to its support; and

when the motor is up to speed, shifting the phase of the power supply voltage to establish a predetermined phase relationship between the drive voltage and the gyroscope wheel, in which the AC voltage supply comprises a resettable counter and the step of shifting the phase of the power supply voltage further comprises resetting the counter.

4,354,394
DEVICE FOR RIGHTING AND STABILIZING A GYRO VERTICAL

Peter Giesenberg, Uhldingen-Mühlhofen, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,392
Claims priority, application Fed. Rep. of Germany, May 1, 1980, 3000265
Int. Cl.³ G01C *19/50*
U.S. Cl. 74—5.44 6 Claims

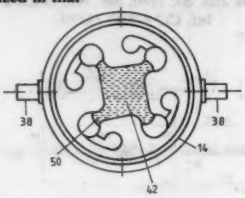
1. A device for righting and stabilizing a gyro vertical comprising:

a disc arranged on the gyro housing, and perpendicular to the gyro spin axis, to be driven in the same sense as the gyro rotor

a cavity provided in the disc and

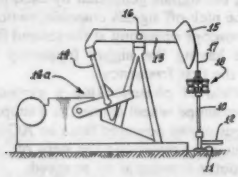
a liquid drop movable in the cavity,

the cavity being formed such that the liquid drop, with an inclination of the gyro spin axis with respect to the vertical, flows downhill into an edge portion of the cavity remote from the gyro spin axis, in which cavity it is taken along and lifted by the wall of the cavity in an angle range, thereby producing a righting torque,
characterized in that



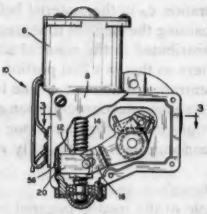
(a) the cavity (40) is arranged centrosymmetrically to the gyro spin axis (16) and
(b) the surface of the liquid drop (42) is relatively large in the central position in the cavity (40) as compared to the surface resulting from an eccentric position of the liquid drop (42).

4,354,395
SHOCK ABSORPTION APPARATUS ASSOCIATED WITH WELL PUMP
John S. Page, Jr., 21372 Brookhurst St., #312, Huntington Beach, Calif. 92646
Filed Dec. 15, 1980, Ser. No. 216,321
Int. Cl.³ F16H *21/32;* E21B *43/00*
U.S. Cl. 74—41 20 Claims



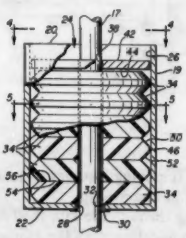
1. A well sucker rod shock absorber apparatus, the combination comprising
(a) upper and lower generally horizontal members to pass the rod at a vertically axial location,
(b) shock absorbing cushion means confined between the members, the cushion means defining an opening to pass the rod, the cushion means comprising flexible cushions located at transverse sides of said opening,
(c) the upper member adapted to receive loading exerted downwardly by the rod,,
(d) the lower member adapted to be supported and stroked up and down by a pump unit,
(e) said cushions defining hollows containing gas, and which are vertically compressible against resistance imposed by said gas, each cushion having an annular outer wall which bulges outwardly, said bulging outer wall height occupying a substantial portion of the spacing defined between said upper and lower members,
(f) guide rod means carried by one of said members and sleeve means carried by the other of said members to receive and guide said guide rod means, the guide rod means including two transversely spaced guide rods and the guide sleeve means including two transversely spaced guide sleeves, the rods confined in said opening between said cushions and at opposite sides of said vertically axially spaced location,
(g) each said cushion comprising bellows having multiple, upper and lower annular convolutions,
(h) and means interconnecting the cushions at opposite sides of said opening to intercommunicate the gas in said cushions at opposite sides of the opening,
(i) said guide rods defining a plane intersecting all of the cushions,
(j) whereby the cushions remain openly and peripherally unobstructed to access for adjustment or replacement.

4,354,396
SPEED CHANGE MECHANISM WITH LOAD BEARING SADDLE
James A. Charles, Hagerstown, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed May 22, 1980, Ser. No. 152,277
Int. Cl.³ F16H *25/18*
U.S. Cl. 74—104 7 Claims



1. In a speed change mechanism having a gear change yoke actuable by a nut screw assembly, said nut being axially movable along said screw, said mechanism including a housing having internal walls; an improvement comprising a load bearing saddle mounted on the nut and engageable with said yoke, said saddle further comprising a radial load-bearing surface, wherein said surface is in sliding engagement with at least one of said internal walls of said housing.

4,354,397
SUCKER ROD SHOCK ABSORBER
Paul W. Fix, P.O. Box 192, Florissant, Colo. 80816
Filed May 9, 1980, Ser. No. 148,544
Int. Cl.³ F16H *21/32;* G05G *3/00*
U.S. Cl. 74—108 6 Claims



1. In a pumpjack unit having a walking beam which reciprocates a bridle, wherein the bridle is connected to a polished rod for reciprocating a downhole pump, the improvement comprising:
a shock absorber apparatus connected between the polished rod and bridle; said shock absorber including an upwardly opening cylindrical housing which terminates at the lower end thereof in an apertured bottom plate member; an apertured upper plate member received within said cylin-

drical housing in spaced relationship respective to said bottom plate member; and a plurality of concentrically arranged, resilient packer members stacked within said cylindrical housing in sandwiched relationship between said upper and bottom plate members; a longitudinally extending axial passageway formed through said upper and bottom plate members and through said packer members and axially receiving the polished rod therethrough;

clamp means supporting the polished rod from the upper plate member, and means by which the cylindrical housing is supported from the bridle, whereby the upper and lower plate members are biased towards one another, and compress the packer elements therebetween with a force equal to the tension in the polished rod;

the durometer of the outermost packer members is higher as compared to the durometer of the innermost packer members;

said packer members are circular with said axial passageway extending through the center thereof, the inside diameter of the packer being of a size to slidably receive the polished rod therethrough, the outside diameter of the packer being of a size to be loosely received by the interior peripheral sidewall of the cylindrical housing.

4,354,398

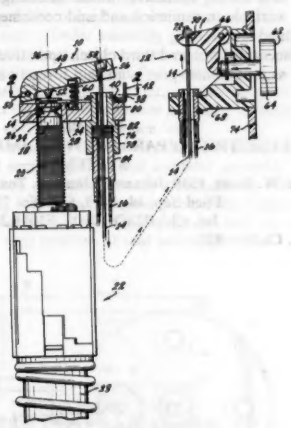
CONTROL MECHANISM FOR HYDRAULIC LOCKING DEVICE

Clyde R. Porter, Los Angeles, Calif., assignor to P. L. Porter Co., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 939,383, Sep. 5, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,356

Int. Cl.³ F16C 1/10

U.S. Cl. 74—501 R **1 Claim**



1. A control mechanism for use with a hydraulic device employed to control relative movement between two members, said hydraulic locking device including a hydraulic cylinder connected to one of the members, a piston rod extending outwardly through one end of the hydraulic cylinder to an exposed end of the piston rod and connected to the other of the two members, and an operating rod operative when moved to a release position with respect to the piston rod to release the hydraulic locking device so it can be reset to alter the separation between the two members, said control mechanism comprising in combination:

a conduit having a proximal end associated with the piston rod and having a distal end;

a cable extending through said conduit, slidable within it, and including a proximal end and a distal end;

push button means affixed to the distal end of said conduit for moving said cable under control of an operator through a stroke with respect to said conduit;

lever means affixed to the piston rod, connected to the proximal end of said conduit, coupled to the proximal end of said cable and responsive to movement of said cable to move the operating rod to the release position with respect to the piston rod, the movement of the operating rod being less than the movement of said push button means to achieve a mechanical advantage;

a spring clip secured to said lever means and retaining said lever means to the exposed end portion of the piston rod to permit said lever means to be attached to the piston rod without the use of tools;

a ball affixed to said cable and pivotably and removably engaging said lever means to avoid bending of the cable as said lever means is moved and to facilitate disengagement of said cable from said lever means when said cable is cut;

said conduit further comprising a threaded collar connecting the proximal end of said conduit to said lever means for altering the length of the conduit under control of an operator to preset the positions of the distal end of the cable at the beginning and the end of the stroke, with respect to the distal end of said conduit;

said spring clip slidably mounted on said lever means to permit an operator selectively to slide said spring clip from a first position in which said spring clip engages said piston rod for retaining thereto said lever means to a second position in which said spring clip does not engage said piston rod, said spring clip shaped to urge in the first position frictional engagement of said threaded collar with said lever means to prevent rotation of said threaded collar, and shaped to release said threaded collar when moved to said second position, to permit rotation of said threaded collar for altering the length of the conduit.

4,354,399

HANDLE BAR FIXING DEVICE FOR A BICYCLE

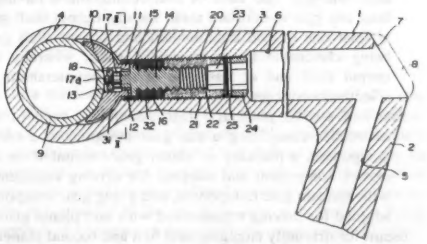
Hitoshi Katayama, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 5, 1979, Ser. No. 91,366

Claims priority, application Japan, Nov. 29, 1978, 53-164931[U]; Nov. 29, 1978, 53-164932[U]

Int. Cl.³ B62K 21/12

U.S. Cl. 74—551.1 **5 Claims**



1. A handle bar fixing device for fixing a handle bar to a handle stem of a bicycle comprising: a handle stem having a lug and a cylindrical holding portion provided at an utmost end of said lug for holding a handle bar, said lug having a through bore, said through bore opening at one end thereof onto an inner periphery of said holding portion and at another end onto a top of said handle stem, and having at its inner periphery a partial screw thread, said lug supporting, through a control member mounted therein, a pusher at a first end portion of said through bore opening into said holding portion in a manner permitting said pusher to be non-rotatable movable axially of said lug, said pusher contacting with a handle bar inserted into said holding portion for urging said handle bar radially of said holding portion, and carrying a screw member,

said control member being housed within said through bore at said lug and having a first screw thread screwable with said partial screw thread at the through bore, a second screw thread screwable with said screw member, and a control recess through which said control member is rotatable from a second end portion of said through bore opening onto said top of said handle stem, said control member being supported to said lug through said first screw thread screwing with said screw thread at the through bore, so that said control member is rotatably controlled through said control recess to move said screw member axially of said lug, whereby said pusher moves to fix said handle bar to said holding portion.

4,354,400

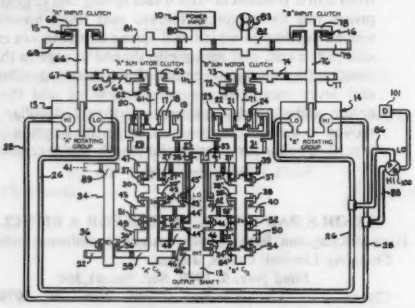
HYDROMECHANICAL TRANSMISSION

Willard C. Baker, Columbus, Ohio, assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 878,346, Feb. 16, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 182,915

Int. Cl.³ F16H *47/04, 37/06*

U.S. Cl. 74—687 **18 Claims**



1. A transmission comprising:

an input shaft, first and second countershafts drivable by said input shaft, and an output shaft, said output shaft having at least one gear and each of said countershafts having at least one gear in constant mesh with an output shaft gear, at least one of said countershaft and output shaft gears being clutchable to its associated shaft, whereby said output shaft and at least one of said countershafts are selectively engageable;

first and second planetary gear assemblies, each of said assemblies comprising a sun gear component, a carrier component, a plurality of planet gears mounted on said carrier component and adapted for driving engagement with said sun gear component, and a ring gear component adapted for driving engagement with said planet gears;

means for drivingly engaging said first and second planetary gear assemblies, said means comprising an hydraulic system having first and second interconnected hydraulic units, said first hydraulic unit drivably associated with said first planetary gear assembly and said second hydraulic unit drivably associated with said second planetary gear assembly;

wherein one of said first planetary gear assembly components and a different one of said second planetary gear assembly components are drivingly engaged with said input shaft; and

wherein one of said first planetary gear assembly components is drivingly engaged with said first countershaft and one of said second planetary gear assembly components is drivingly engaged with said second countershaft.

4,354,401

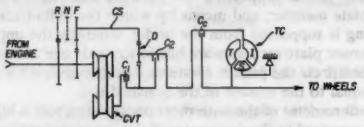
AUTOMATIC TRANSMISSION FOR AUTOMOBILES

Takashi Omitsu, Troy, Mich., assignor to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Apr. 25, 1980, Ser. No. 143,896

Int. Cl.³ F16H *37/00*

U.S. Cl. 74—689 **8 Claims**



1. An automatic transmission for vehicles having an internal combustion engine and driving wheels comprising:

a continuously variable transmission device connected with an engine output for continuously variably transmitting a partial torque in accordance with conditions of vehicle speed and degree of engine throttling;

a counter shaft connected with the engine output and transmitting the remainder of the torque from the engine;

a combiner gear mechanism receiving the torque from the engine through said counter shaft and from said continuously variable transmission device;

a fluid torque converter for converting torque from the combiner gear mechanism and transmitting the torque to said driving wheels;

reverse drive means interposed between said engine and said torque converter for reversely transmitting the torque from the engine to said driving wheels;

a first clutch operatably interconnecting said continuously variable transmission and said combiner gear mechanism; and

a second clutch and third clutch operatively interconnecting said combiner gear with said torque converter.

4,354,402

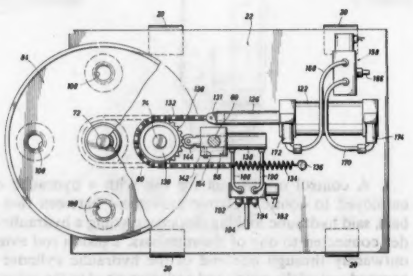
VOLUMETRIC APPARATUS WITH IMPROVED DRIVE SYSTEM

John W. Scott, 1510 Johanna, Houston, Tex. 77055

Filed Sep. 14, 1979, Ser. No. 75,427

Int. Cl.³ B23Q *17/00*; F16H *27/02*

U.S. Cl. 74—822 **10 Claims**



1. Rotary apparatus comprising:

a stationary assembly;

a rotary assembly mounted on said stationary assembly for rotation relative thereto and including rotary shaft means;

reciprocating drive means comprising a first pneumatic piston and cylinder assembly, said piston and cylinder assembly having one member fixed with respect to said stationary assembly and another member reciprocable with respect to said fixed member;

a driven member comprising a sprocket wheel mounted on said shaft means;

link means drivingly connecting said driven member to said drive means for rotation in a first direction upon movement of said reciprocable member of said first piston and cylinder assembly generally away from said sprocket wheel and for rotation in a second direction opposite the first direction upon reciprocating movement of said reciprocable member generally away from said sprocket wheel, said link means comprising

a chain having one end secured to said reciprocable member of said first piston and cylinder assembly, a mid portion extending circumferentially about a portion of the periphery of said sprocket wheel in contact therewith, and the other end secured to said stationary assembly,

a tension spring interconnecting said other end of said chain to said stationary assembly to keep said chain taut between said ends thereof;

clutch means interconnecting said sprocket wheel and said shaft means and operative upon rotation of said driven member in said first direction to cause rotation of said shaft means therewith, and upon rotation of said driven member in said second direction, to permit relative rotation between said driven member and said shaft means, whereby said shaft means is rotated by said drive means in temporally spaced increments; and

indexing synchronization means comprising

an indexing wheel mounted on said shaft means for joint rotation therewith and having a generally radially outwardly facing peripheral indexing surface including at least one convex segment and at least one concave segment,

a second pneumatic piston and cylinder assembly operatively associated with said shaft means for positively stopping rotation of said shaft means generally at the end of each stroke of said reciprocable member of said first piston and cylinder assembly generally away from said sprocket wheel, said second piston and cylinder assembly having one member fixed with respect to said stationary assembly and the other member reciprocable with respect to said fixed member generally toward and away from said indexing surface, and

detent means carried by the end of said reciprocable member of said second piston and cylinder assembly and adapted, when extended toward said indexing surface, to ride along said convex segment to permit rotation of said indexing wheel and to engage in said concave segment to stop rotation of said indexing wheel.

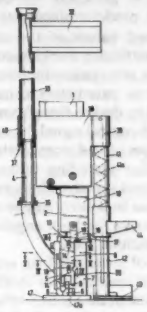
4,354,403

SCREW DRIVER APPARATUS

Gerhard Boëgel, Heerbrugg, and Max Sahli, Altstaetten, both of Switzerland, assignors to SFS Stadler AG, Heerbrugg, Switzerland

Filed Jan. 26, 1979, Ser. No. 6,634
Claims priority, application Austria, Feb. 14, 1978, 1063/78
Int. Cl.³ B23P *19/00*
U.S. Cl. 81—57.37 **7 Claims**

1. Screw driving apparatus comprising a first member having a pair of jaws pivotally mounted thereon for holding a screw to be driven and for releasing said screw upon pivotal movement of said jaws; chute means for delivering a screw to between said jaws to be held thereby in a position to be driven; driver means for engaging a screw held by said jaws to effect driving thereof; control means mounted for movement together with said driver means for effecting pivotal movement of said jaws to release said screw as said driver means is brought into driving engagement therewith; and magnet means located within said chute means adjacent said jaws for holding



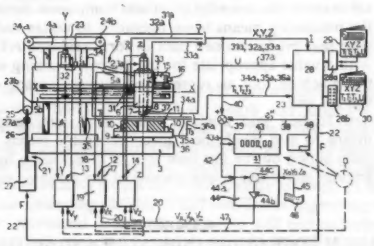
a screw to be driven against the force of gravity in position for engagement by said driver means.

4,354,404

ARRANGEMENT FOR INCREASING THE PRECISION OF A MACHINE TOOL

Francesco C. Ramusino, Milan, Italy, assignor to Innocenti Santeustacchio S.p.A., Franchi, Italy

Filed Jan. 23, 1980, Ser. No. 114,696
Claims priority, application Italy, Mar. 27, 1979, 21346 A/79
Int. Cl.³ B23B *3/10, 11/00*
U.S. Cl. 82—2 D **7 Claims**



1. In a machine tool installation in which the tool of a machine tool is positioned relative to a workpiece by displacement of carriage means of the machine tool to coordinate positions intended to correspond to a desired tool position, an arrangement for at least partially compensating for deviation between the actual and desired tool positions such as caused by elastic deformation in the machine tool, said deviation being composed of component deviations the magnitudes of which are dependent on the current working state of the machine tool, said arrangement comprising:

a mechanical force generator arranged to physically act upon the machine tool to cause displacements in the position of the tool relative to the workpiece, the magnitudes of said displacements being dependent on the value of a control signal fed to said mechanical force generator,

transducers attached to the machine tool and arranged to generate output signals representing the values of a number of parameters characterizing the angular and linear working state of the machine tool, said parameters including the coordinate positions of said carriage means, and

electronic signal processing means connected to receive said output signals from said transducers and including memory means arranged to store predetermined data interre-

lating values of said parameters representing the machine working state with values of said control signal appropriate to develop working state parameters and cause said mechanical force generator to cancel said component deviation, said predetermined data interrelating values being determined values of the machine working state dependent on particular working conditions, said processing means being arranged to monitor the current values of said working state parameters as represented by said output signals and to derive therefrom the current appropriate value of said control signal, by utilizing and comparing the current values of said stored data, and the said processing means further including output means operative to output said control signal with its value set to said current appropriate value to control said mechanical force generator and compensate for both angular and linear displacements of the machine tool.

7. In a machine tool installation, an arrangement for increasing the precision of a machine tool by compensating for angular and linear component deviations in tool positioning caused by factors which vary in their effect in dependence on the current working state of the machine tool, said arrangement comprising:

mechanical force generator means responsive to an input control signal fed thereto to physically act upon the machine tool in a manner such as to cancel component deviations,

sensor means connected to said machine tool and arranged to generate output signals representative of the current angular and linear working state of the machine tool,

electronic signal processing means connected to receive said output signals and including memory means arranged to store predetermined data interrelating said working state parameter values with corresponding control signal values being determined values of the machine working state dependent upon particular working conditions appropriate to cause the cancellation of said component deviations, the processing means being operative to utilize and compare said predetermined data to form said control signal with a value appropriate for the current working state of the machine tool as represented by said sensor output signals, and

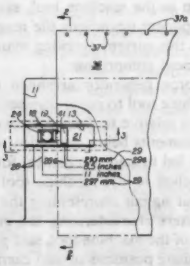
means feeding said control signal from said processing means to said mechanical force generator means physically acting on the machine tool to compensate for both angular and linear displacements of the machine tool.

4,354,405

PUNCH EDGE GUIDE INDICATOR AND METHOD

Elmer G. Szanto, Saratoga; George Wu, San Jose, and Salvatore Barone, Santa Cruz, all of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Dec. 8, 1980, Ser. No. 214,012
Int. Cl.³ B26F 1/06
U.S. Cl. 83—13 **8 Claims**



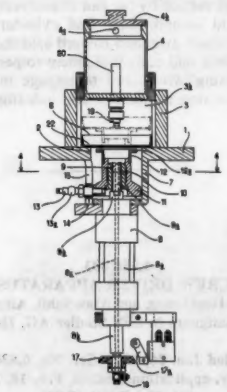
8. A method of setting the side edge guide of a punch for paper and other flexible material so that the endmost holes punched in said material are equally distant from the end margins of said material despite accumulations for tolerances in the assembly of parts for such punch, said punch having a platen formed with the transverse window, a plurality of punch pins spaced transversely across the inner end of said platen member to punch holes in said material, actuating means for actuating said punch pins, an edge guide for one edge of said material extending above the level of said platen, a support supporting said guide member for movement along said window, said platen being marked with first indicia indicating different lengths of material to be punched, said method comprising providing a gage sheet of a given length formed with gage holes of the same dimension as the holes punched by said pins and at the same spacing as said pins, said given length being of a length corresponding to one of said different lengths of material, the endmost gage hole being the same distance from the end of said gage sheet as the endmost hole in said material of given length is spaced relative to the edge margin of said material, actuating said actuating means so that said punch pins fit properly into said gage holes, adjusting the position of said edge guide to fit against the edge margin of said gage sheet, and applying second indicia to said support aligned with the particular one of said first indicia corresponding to the length of said gage sheet.

4,354,406

METHOD OF AND DEVICE FOR FORMING OPENINGS IN A GELATINOUS SUBSTANCE

Alain Brun, Pavillons sous Bois; Louis Marcotte, Chevilly la rue Rungis, and Bela Szarazi, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Jan. 13, 1981, Ser. No. 224,501
Claims priority, application France, Jan. 14, 1980, 80 00693
Int. Cl.³ B26F 1/00
U.S. Cl. 83—24 **17 Claims**



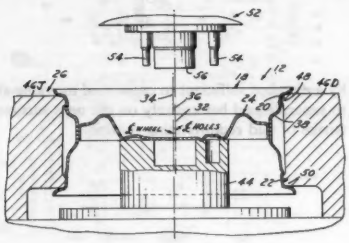
1. A method of forming openings in a gelatinous substance, comprising the steps of: causing a hollow punch tool to penetrate the gelatinous substance perpendicularly to the surface and to the bottom of the gelatinous substance along a strictly rectilinear path along the axis of the tool; when the tool has arrived at least near the bottom effecting relative motion of low amplitude between the gelatinous substance and the tool in a direction substantially perpendicular to the path of penetration; and then withdrawing the pellet cut out from within the hollow tool.

4,354,407

METHOD OF WHEEL MANUFACTURE FOR CORRECTING ROTATIONAL NON-UNIFORMITY OF A PNEUMATIC TIRE AND WHEEL ASSEMBLY AND APPARATUS FOR PERFORMING SUCH METHOD

Anwar Daudi, East Lansing; John H. Golata, Lansing, and Doarde G. Triponi, East Lansing, all of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 104,319, Dec. 17, 1979, Pat. No. 4,279,287.
This application Feb. 17, 1981, Ser. No. 234,651
Int. Cl.³ B26F 1/02
U.S. Cl. 83—55 4 Claims



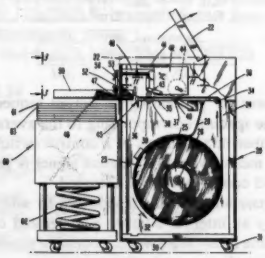
2. A method of forming mounting openings in a disc vehicle wheel having a rim with a tire bead seat region and a wheel mounting disc mounted internally of said rim, said method comprising the steps of locating said wheel on a predefined first axis by clamping said bead seat region coaxially with said first axis and then forming mounting openings in said disc on a second axis offset by a prespecified distance from said first axis such that said mounting openings formed in said wheel disc are eccentrically offset by said prespecified distance from said bead seat region.

4,354,408

PLACE MAT PRODUCING AND DISPENSING APPARATUS

Clyde R. Carte, Hudson Falls, N.Y., assignor to Valcour Imprinted Papers, Inc., Glens Falls, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,546
Int. Cl.³ B26D 7/06
U.S. Cl. 83—162 10 Claims



1. In an apparatus for dispensing place mats of thin sheet material from a supply roll of a web of said sheet material, including

(a) a support;

(b) means for mounting said supply roll on said support;

(c) a horizontal, substantially planar table carried by said support;

(d) drive roll means operating on said web in a substantially planar condition for drawing said web of said sheet material in a forward path over said table;

(e) a motor for driving said drive roll means;

(f) cutter means disposed at the forward end of the table to cut off a predetermined length of said web, said length constituting one of said mats,

the improvement comprising

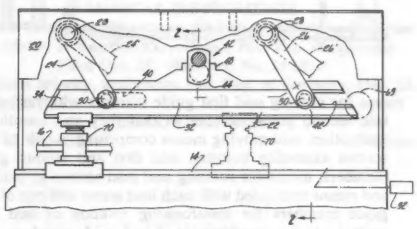
(g) curved guide means positioned forward of said cutter means and cooperating with said table to receive said length of web and curl upwardly the side margins of said length of web enabling said web to extend substantially horizontally outwardly from said apparatus in cantilever fashion with its inner end supported by said curved guide means, said drive means maintaining said web in a flat condition when cut by said cutter means and said curved guide means curling said side margins after said web has passed said cutter means.

4,354,409

FLYING CUTOFF MACHINE

John F. Riera, 3689 Sandburg, Troy, Mich. 48084; Billy J. Bielawski, Sr., 8065 Robinwood, Detroit, Mich. 48234, and John J. Pavelec, 4155 Three Oaks, Apt. 2A, Troy, Mich. 48098

Filed Feb. 3, 1981, Ser. No. 231,247
Int. Cl.³ B23D 25/06
U.S. Cl. 83—285 13 Claims



1. A cutoff machine for severing elongated material moving continuously longitudinally of its length and having a die carriage attachable to the material for movement therewith including a transversely reciprocating cutting die for severing material during its movement, comprising: a frame having a bed portion slidably supporting said carriage member, an elongated ram extending parallel to said bed, means supporting said ram for movement in spaced relation to said bed including a slide member connected to said ram for relative sliding movement longitudinally of said ram and a pair of links attached to said slide member and to said frame to support said slide member for swinging movement parallel to said bed, rotating drive means having a crank operatively connected to said ram for reciprocating said ram relative to said slide member and moving said ram in an orbital path relative to said bed, and guide means on said ram connecting said cutting die for sliding movement longitudinally of said ram and transverse reciprocating movement relative to said bed during orbital movement of said ram relative to said bed.

4,354,410

STRAIGHT LINE INSULATION CUTTER ASSEMBLY

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Dec. 6, 1977, Ser. No. 858,066
Int. Cl.³ B26D 1/18
U.S. Cl. 83—471.3 3 Claims

1. Sheet material cutting apparatus comprising:

a first elongated support member;

a first cutting tool for cutting sheet material;

a sheet material support surface;

first and second guide members disposed generally parallel to each other, said support surface being disposed gener-

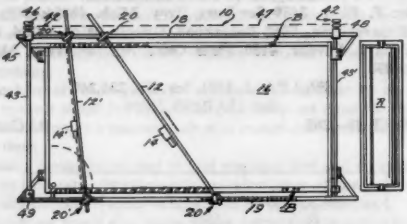
ally horizontally in between said guide members, and said guide members spaced a predetermined distance apart and disposed in a same, generally horizontal, plane;

means for pivotally mounting said first support member, for pivotal movement about a generally vertical axis, with respect to each of said first and second guide members;

means for providing linear movement of said pivotally mounting means with respect to said first and second guide members, along said first and second guide members;

means for providing linear relative movement between said first support member and said pivotally mounting means;

means for mounting said first cutting tool on said first support member for movement along said first support member, and means for moving said cutting tool along first support member, so that cutting of sheet material, disposed on said support surface, along a line parallel to said first support member is effected;

and

means for moving said first guide member with respect to said second guide member so that they stay parallel to each other, said moving means comprising: a pair of lead screws extending between said first and second guide members; means for rotating said lead screws in tandem; and means associated with each lead screw and one of said guide members for transforming rotation of said lead screws into linear movement of said guide members relative to each other, said transforming means comprising a traveling nut associated with each lead screw and one of said guide members; and wherein said moving means further comprises a pair of parallel guiding edge surface manifestations of said said support surface disposed parallel to said lead screws, guide roller means associated with each nut for engaging said guiding edge surface manifestations, and means operatively connecting each nut to said guide roller means for effecting guided movement of said nuts with respect to said support surface.

4,354,411

COLD SHEARS AND METHOD FOR CUTTING BILLETS AND BARS

Karl Griese, Düsseldorf; Emil F. Kersting, Ratingen, and Rolf Schulte, Düsseldorf, all of Fed. Rep. of Germany, assignors to Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,605

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911765

Int. Cl.³ B23D *15/02*

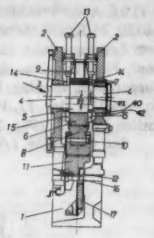
U.S. Cl. 83—862 **6 Claims**

1. A method for shearing bars having a large cross-section, comprising:

(a) placing a bar to be sheared over a stationary shear blade;

(b) reciprocatingly moving a movable shear blade between upper and lower limits above said bar, so as not to contact said bar, by continuously rotating a crankshaft having an attachment connected to said movable shear blade; and

(c) in response to the rotational position of said crankshaft, lowering said movable shear blade, on an up stroke of said reciprocating motion by rotating an eccentric mounted between said crankshaft and said movable shear blade to increase the distance between said movable shear blade and said crankshaft to lower said upper and lower limits



by a distance sufficient to cause said movable shear blade to separate said bar entirely on the next successive down stroke of said reciprocating motion.

4,354,412

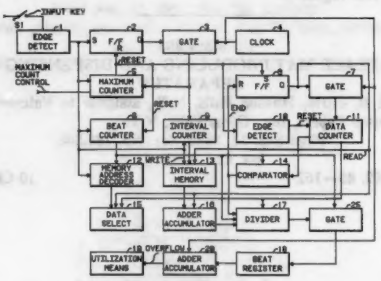
ADAPTIVE METRONOME FOR AN AUTOMATIC RHYTHM GENERATOR

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed May 18, 1981, Ser. No. 264,763

Int. Cl.³ G10H *1/42, 7/00*

U.S. Cl. 84—1.01 **13 Claims**



1. Apparatus for generating an output sequence of signals having a time spacing corresponding to the average time spacing of a number of actuations of a control switch comprising;

detection means whereby a detect signal is generated each time said control switch is actuated,

interval generating means responsive to said detect signal whereby an interval number is generated corresponding to the time interval between successive generations of said detect signal,

an interval memory means for storing said interval number in response to said detect signal,

interval averaging means whereby a frequency number is generated corresponding to the average value of stored interval numbers read out of said interval memory means,

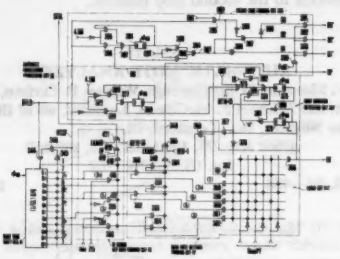
frequency generating means whereby said output sequence of signals is generated having a time spacing corresponding to said frequency number, and

utilization means whereby said output sequence of signals is used as a frequency control signal source.

4,354,413
ACCOMPANIMENT TONE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT

Hideo Suzuki, Kamimura, and Makoto Kaneko, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,905
Claims priority, application Japan, Jan. 28, 1980, 55-8607; May 31, 1980, 55-73635; May 31, 1980, 55-73637
Int. Cl.³ G10H *1/38, 5/00, 7/00*
U.S. Cl. 84—1.01 **28 Claims**



1. An accompaniment tone generator for an electronic musical instrument comprising:

a keyboard having plurality of keys;

depressed key detection means for outputting, in accordance with a certain time division multiplex timing, a pulse at an assigned time slot corresponding to a key being depressed;

a shift register for successively shifting a pulse outputted from the depressed key detection means in synchronization with said time division multiplex timing;

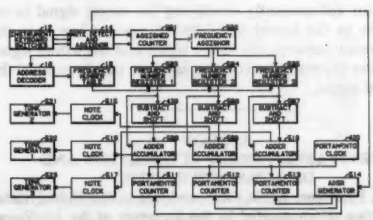
key data formation means for taking out individual output pulses from a plurality of predetermined stages of said shift register in accordance with predetermined conditions; and

tone production means for generating, as an accompaniment tone, a tone signal of the note corresponding to the time slot of each pulse taken out by key data forming means.

4,354,414
CONSTANT SPEED POLYPHONIC PORTAMENTO SYSTEM

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Glendale, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Nov. 3, 1980, Ser. No. 203,021
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **15 Claims**



1. In a keyboard operated electronic musical instrument having a keyboard containing a plurality of keyswitches, each operable in either an actuated or unactuated switch state, and having a number of tone generators operated at musical frequencies determined by a frequency number selected in response to an actuated keyswitch, apparatus for assigning the frequency numbers according to a priority logic whereby polyphonic portamento frequency effects are produced without frequency cross over transitions comprising;

a frequency number memory means for storing a table of frequency numbers,

detection means for scanning said plurality of keyswitches in each of a sequence of keyswitch scans wherein a detection signal is generated for each keyswitch in an actuated keyswitch state,

frequency addressing means for accessing a frequency number from said frequency number memory means in response to said detection signal,

a plurality of frequency storage means each of which corresponds to one of said number of tone generators,

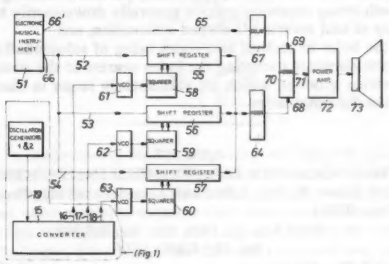
an assignor means for storing a frequency number accessed from said frequency number memory means in a multiplicity of said plurality of frequency storage means according to said priority logic, and

a plurality of portamento control means each of which corresponds to one of said number of tone generators, for producing said polyphonic portamento frequency effects in response to frequency numbers stored in said plurality of frequency storage means.

4,354,415
PHASE-MODULATING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

Werner Sonnabend, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,815
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952113
Int. Cl.³ G10H *1/043*
U.S. Cl. 84—1.24 **10 Claims**



1. In an electronic musical instrument comprising a source of audio-frequency oscillations, electroacoustic transducer means, three parallel channels connecting said source to said transducer means, shift registers in said channels stepped by respective high-frequency pulse generators with operating frequencies variable by control signals applied thereto, and modulating means connected to said pulse generators for subjecting said audio-frequency oscillations to delays varying at subaudible rates,

the improvement wherein said modulating means comprises:

waveform-generating means for producing a composite periodic signal synthesized from at least two additively combined sub-audio-frequency components;

a transmission path for said composite signal including cascaded first, second and third operational amplifiers interconnected by first and second RC networks of mutually different time constants introducing respective frequency-dependent phase shifts;

a first connection extending from a junction between said first operational amplifier and said first RC network to a frequency-adjusting input of a first of said pulse generators for supplying same with a first control signal;

a second connection extending from a junction between said second operational amplifier and said second RC network to a frequency-adjusting input of a second of said pulse generators for supplying same with a second control signal differing from said first control signal; and

a third connection extending from an output of said third operational amplifier to a frequency-adjusting input of a third of said pulse generators for supplying same with a third control signal differing from said first and second control signals.

4,354,416

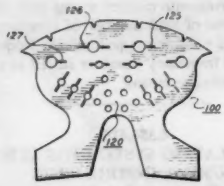
VIOLIN BRIDGE FOR A STRINGED INSTRUMENT

Carl Strait, R.R. #3, Box 85, Andover, N.J. 07821

Filed Oct. 19, 1981, Ser. No. 312,381

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—309 **4 Claims**



1. A bridge for use with a stringed instrument comprising:

(a) a generally fan-shaped upper body portion supported by a pair of legs having an inverted U-shaped indentation therebetween, said upper body portion having a smooth, curved upper surface with string receiving grooves symmetrically spaced thereon;

(b) a series of holes in said upper body portion extending from each string receiving groove generally downwardly to the top of said inverted U-shaped indentation; and

(c) the holes in each of said series being of substantially uniform diameter excepting the holes nearest to the string receiving grooves, which are substantially larger in diameter than the other holes.

4,354,417

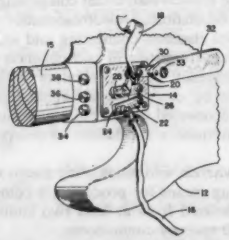
TONE CHANGER FOR STRINGED INSTRUMENT

Joseph Glaser, II, Rte. 6, Box 240, Leipers Creek Rd., Franklin, Tenn. 37064

Filed Sep. 16, 1981, Ser. No. 302,498

Int. Cl.³ G10D *3/14*

U.S. Cl. 84—312 R **12 Claims**



1. In a stringed musical instrument that is held adjacent to a performer and has a plurality of tensioned strings that are strummed by the performer to produce music, the improvement comprising:

a first arm pivotally mounted on said instrument for pivotal movement in a first direction between first and second stop position;

first transmission means connected between said first arm and a first selected string of the instrument for varying the tension in the first selected string in response to movement of said first arm from the first stop position to the second stop position;

a second arm pivotally mounted on the instrument for pivotal movement in a second direction between first and second stop positions; and

second transmission means connected between said second arm and a second selected string of the instrument for varying the tension in the second selected string in response to movement of said second arm from the first stop position to the second stop position.

4,354,418

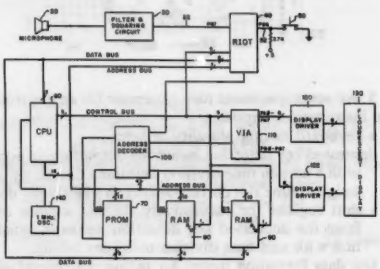
AUTOMATIC NOTE ANALYZER

John V. Moravec, Willow Springs; William P. Carlson, Hanover Park, and Michael J. McGowan, Lombard, all of Ill., assignors to Nuvatec, Inc., Lombard, Ill.

Filed Aug. 25, 1980, Ser. No. 180,860

Int. Cl.³ G10G *7/02*

U.S. Cl. 84—454 **15 Claims**



1. An automatic note analyzer comprising:

means for receiving an input signal indicative of a musical tone;

means for automatically and repeatedly generating and updating a sequence of measured signals, each measured signal indicative of the measured value of a predetermined parameter of the input signal at a respective time;

means for automatically generating a target signal in response to the sequence of measured signals such that the target signal is indicative of an average of the measured value of the predetermined parameter of the input signal during a first time period;

means for automatically storing a signal corresponding to one of the measured signals at a second time subsequent to the first time period, only when said one of the measured signals deviates from a signal corresponding to the target signal by less than a predetermined amount; and

means for automatically modifying the target signal in response to the stored signal by an amount less than the difference between the target signal and the stored signal in order to cause the target signal more nearly to equal the stored signal.

4,354,419

SURVIVABLE TARGET ACQUISITION AND DESIGNATION SYSTEM

Charles F. Patterson, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

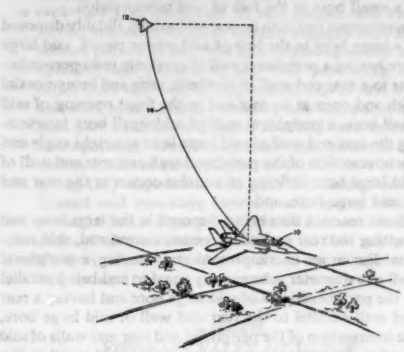
Filed Aug. 8, 1980, Ser. No. 176,437

Int. Cl.³ F41G *7/00, 7/30*

U.S. Cl. 89—1 A **10 Claims**

1. A target acquisition and designation system for use in a hostile environment, comprising: an aircraft; an unmanned glider towed by the aircraft; means controlling the glider to fly

at an elevation substantially above the aircraft; a towline connecting the glider to the aircraft, said towline comprising at least one prestressed load-bearing tension member, and a flexible member surrounding the tension member having complementary airfoil sections forming a symmetrical streamlined exterior shape; electro-optical avionics means carried by the glider for acquiring and designating a target; and means for transmitting signals from the electrooptical avionics means to the aircraft.



4,354,420

FLUID MOTOR CONTROL SYSTEM PROVIDING SPEED CHANGE BY COMBINATION OF DISPLACEMENT AND FLOW CONTROL

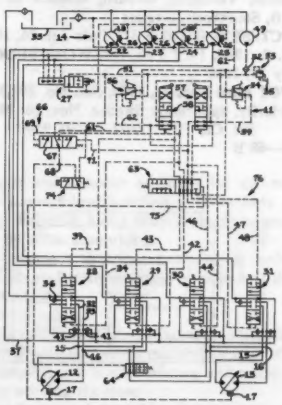
Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00928, § 371 Date Nov. 1, 1979, § 102(e) Date Nov. 1, 1979, PCT Pub. No. WO81/01311, PCT Pub. Date May 14, 1981

PCT Filed Nov. 1, 1979, Ser. No. 116,741

Int. Cl.³ F01B *25/02*

U.S. Cl. 91—6 **6 Claims**



1. A control system (11) for at least one fluid motor (12) which is driven by pressurized working fluid and which has displacement adjustment means (17) for changing the displacement of said motor (12) to provide for speed changes, the control system having control means (66) for automatically actuating said displacement adjustment means (17) upon occurrence of a predetermined condition, a manually operable motor speed control valve means (54) for selectively varying the rate of flow of said working fluid to said motor (12) and including at least one additional manually actuatable control means (58) for selectively initiating said predetermined condition, wherein the improvement comprises:

flow adjusting means (76) for reducing the flow of working fluid which is available to said motor (12) when the displacement thereof is increased and for increasing the flow of working fluid available to said motor (12) when the displacement thereof is decreased, said flow adjusting means (76) also being actuated by said control means (66) upon occurrence of said predetermined condition, and wherein said control means (66) senses actuation of said additional control means (58) and responds thereto by causing said displacement adjustment means (17) to increase the displacement of said motor (12) and by causing said flow adjusting means (76) to reduce the flow of working fluid available to said motor (12).

4,354,421

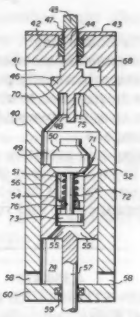
ENERGY RECOVERY RECIPROCATING ENGINE

J. Robert Sims, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 18, 1980, Ser. No. 170,250

Int. Cl.³ F15B *21/02*; F01L *15/12, 15/16*

U.S. Cl. 91—39 **11 Claims**



1. A reciprocating engine comprising: at least one cylinder, an inlet port in said cylinder, located toward one end thereof, an outlet port in said cylinder, located distal to said inlet port, a first valve movably seated in said inlet port, means biasing said first valve into said inlet port, a piston slidably movable in said cylinder, drive rod means operably associated said piston to a crankshaft, said piston having a conduit therethrough and a second valve movably mounted in said conduit, toward said first valve and aligned to contact said first valve, said second valve being biased out of said conduit, whereby contact of said first valve and said second valve forces said second valve into said conduit and forces said first valve out of said inlet port, wherein the improvement comprises time adjustable means for biasing said first valve into said inlet port to close said inlet.

4,354,422

LOAD RELIEF DEVICE FOR POWER STEERING SYSTEM

Masao Nishikawa, Tokyo; Takashi Aoki, Wako, and Yoichi Sato, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,104

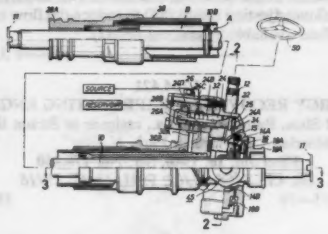
Claims priority, application Japan, Apr. 19, 1979, 54-48163

Int. Cl.³ F15B *13/16, 15/22*

U.S. Cl. 91—358 R **15 Claims**

1. In a power steering system for a vehicle including: a source for supplying a hydraulic medium; a reservoir for accumulating said hydraulic medium; a hydraulic cylinder for providing power assistance to a steering operation of said

vehicle; said hydraulic cylinder having two chambers defined by a piston; a steering rack supporting said piston; a steering pinion operably engaged with said steering rack and adapted for rotary movement in unison with said steering operation of said vehicle; said steering rack being adapted to move linearly in response to said rotary movement of said steering pinion; a four-way valve of the open-center type having a neutral position in which said source is connected with said reservoir, and a power-assist position in which said source is selectively connected with either one of said chambers of said hydraulic cylinder; and said four-way valve being actuatable to be selectively set at either of said neutral and power-assist positions, in response to rotary movement of said steering pinion;



a load relief device comprising:

a four-way valve actuation member arranged to be swingable about an axis substantially parallel to the axis of said steering pinion in response to rotary movement of said steering pinion, so as to move said four-way valve by said swinging motion; and

means for operating said actuation member upon detecting an end of said linear movement of said steering rack such that said four-way valve is moved into said neutral position thereof regardless of said rotary movement of said pinion.

4,354,423

REACTION STRUCTURE OF BOOSTER

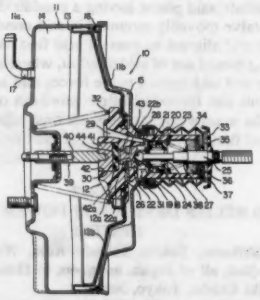
Atsushi Ohmi, Anjo; Kaoru Tsubouchi, Toyota, and Michiharu Nishii, Chiryu, all of Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Filed May 9, 1980, Ser. No. 148,372

Claims priority, application Japan, May 10, 1979, 54-57729

Int. Cl.³ F15B 9/10

U.S. Cl. 91—369 A **3 Claims**



1. In a brake booster including:

a cylinder housing,

a power piston with a center hub of synthetic resin axially movable within the housing and including a cylindrical hollow shaft rearwardly extending from the center hub,

a control valve mechanism arranged in the cylindrical hollow shaft and including first and second valve elements coaxially aligned, the second valve element being operatively connected at its rear end with a manually operable push rod and the front end thereof being slidably disposed in a small bore in the hub of said power piston,

a power output rod with its rear end axially slidably disposed in a large bore in the hub of said power piston, said large bore having a peripheral wall of synthetic resin perpendicular to a rear end wall of synthetic resin and being coaxial with and open at its rear end to the front opening of said small bore, a peripheral wall of said small bore intersecting the rear end wall of said large bore at a right angle and the intersection of the peripheral wall and rear end wall of said large bore defining an annular corner at the rear end of said large bore, and

an elastic reaction disc being disposed in the large bore and abutting the rear end of the power output rod, said reaction disc in an uncompressed state having a peripheral wall of a diameter substantially equal to and being parallel to the peripheral wall of said large bore and having a rear end wall parallel to the rear end wall of said large bore, the intersection of the peripheral and rear end walls of said reaction disc defining an annular corner, said reaction disc being received in said large bore so as to be compressed upon booster operation between the rear end of the power output rod and the front end of the second valve element and the rear end wall of said large bore,

the improvement comprising the annular corners of said large bore and said reaction disc in an uncompressed state each being rounded at the same predetermined radius and the rear end wall and annular corner of said reaction disc directly contacting and cooperating with the rear end wall and annular corner of said large bore to permit precise determination of the time and distance of compression of the rear end wall of said reaction disc into said small bore to contact the front end of said second valve element thereby providing a definite jumping value without indefinite delay of output power rise.

4,354,424

PNEUMATIC OPERATING DEVICE

Sven Nordlund, Vällingby, Sweden, assignor to Wire Matic Regler AB, Stockholm, Sweden

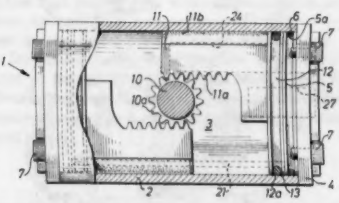
PCT No. PCT/SE79/00240, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 2, 1980, PCT Pub. No. WO80/01096, PCT Pub. Date May 29, 1980

PCT Filed Nov. 21, 1979, Ser. No. 202,382

Claims priority, application Sweden, Nov. 24, 1978, 7812136

Int. Cl.³ F01B 7/02, 31/10, 9/00

U.S. Cl. 92—69 R **10 Claims**



1. A pneumatic operating device (1) for regulating a valve, comprising:

a cylinder (2) having an end wall (5);

a piston (12) slidably mounted in said cylinder, said piston having a bore (24) therein;

an operating element (10) rotatably mounted in a side surface (2b) of said cylinder so that an axis of said operating element extends in a direction substantially perpendicular to and intersecting a central longitudinal axis of said cylin-

der, said operating element extending across said cylinder along said perpendicular direction, said operating element forming a seal with said side surface of said cylinder and having first teeth (**10***a*) thereon;

a rack part (**11**) connected to said piston, said rack part having second teeth (**11***a*) thereon engaged with said first teeth, a portion of said rack part extending axially into said cylinder, said portion of said rack part being laterally offset from said central longitudinal axis of said cylinder, said bore in said piston extending into said portion of said rack part a sufficient distance that said bore extends past said operating element axis when said piston is adjacent said end wall of said cylinder; and

a spring (**26**) disposed in said bore for biasing said piston toward said operating element, said spring being compressed when said piston is displaced from said end wall of said cylinder a maximum distance so that said piston is always positively urged toward said operating element by said spring.

4,354,425

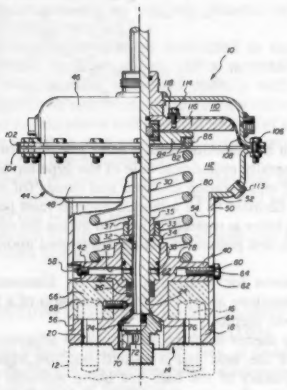
FIRE-SAFE VALVE ACTUATOR

Billy R. Bruton; Jerome E. Corneillie, both of Longview, and Marion W. Perkins, White Oak, all of Tex., assignors to U.S. Industries, Inc., New York, N.Y.

Filed May 9, 1980, Ser. No. 148,385

Int. Cl.³ F01B *19/00*; F16J *3/00*; F01B *29/00*

U.S. Cl. 92—94 **12 Claims**



1. A bonnet and actuator assembly for use with a valve adapted for use in a line including a valve body and a valve member, the assembly being adapted to be connected to the valve body by bolts, comprising:

a bonnet having a first outturned flange with bolt holes therein adapted to receive said bolts to bolt the bonnet to the valve body;

an actuator housing;

an actuator stem within said housing and adapted to be connected with said valve member in said valve body;

stem actuator means in said housing and connected to said stem for moving the stem;

a substantially imperforate shroud connected to said actuator housing and extending downwardly therefrom into engagement with said outturned flange outwardly of said bolt holes so as to protect said bolts connecting the bonnet with the valve body, when assembled thereon, from direct contact by heat from external fires and retarding heat induced deterioration of said bolts holding the bonnet to the valve body and,

a plurality of fastener bolts having heads which are accessible externally of said shroud for releasably connecting said shroud to said bonnet, whereby said bolts can be removed without disconnecting said bonnet from said valve body.

4,354,426

EXPANSION-CONTROLLED LIGHT ALLOY PISTON

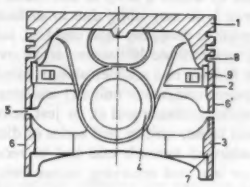
Werner Steidle, Bad Friedrichshall, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,289

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949091

Int. Cl.³ F16J *1/04*

U.S. Cl. 92—235 **6 Claims**



1. An expansion controlled light alloy piston consisting essentially of at least one piston ring below which is disposed a piston skirt, said piston having therewithin a piston pin boss, said skirt being provided on its periphery with a transverse slot which extends around the entire periphery of the skirt or part thereof to define an upper part of said skirt and a lower part of said skirt, said transverse slot being disposed at a level of said piston pin boss, said piston having a constant diameter over the length of said skirt and said piston pin boss being integral with the upper part of said skirt and the lower part of said skirt, which upper and lower parts of said skirt are connected to an outer portion of said piston pin boss.

4,354,427

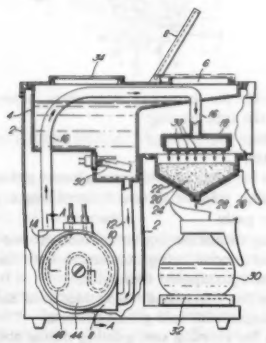
COFFEE AND TEA MAKING OR BREWING APPARATUS

Maciej K. Filipowicz, St. Leonards-on-Sea, and Cecil Hayes, Hastings, both of England, assignors to W. M. Still & Sons Limited, East Sussex, England

Filed Jun. 30, 1980, Ser. No. 164,234

Int. Cl.³ A47J *31/10*

U.S. Cl. 99—307 **5 Claims**



1. Brewing apparatus for coffee and tea, said apparatus comprising

a supply tank for containing a supply of water,

a heater unit for heating water to boiling point and creating pressure,

means to supply water from said supply tank to said heater unit,

a basket for carrying a bed of one of coffee and tea, said basket being lined with a filter paper prior to receipt of said bed, hot water being passed through said bed to produce a brewed liquor,

a spray head positioned above said bed, said spray head being adapted to discharge hot water on said bed,

a series of dimples on the bottom of said spray head, each of said dimples defining a spray hole through which hot water can pass, each of said dimples extending downwardly beneath the bottom of said spray head so that said spray holes are positioned beneath the bottom of said spray head, and each of said dimples being provided with a surface to which a drop of hot water passing through said spray hole may cling due to surface tension of said water prior to dropping onto said bed, said dimples cooperating to distribute hot water drops over said bed in a random fashion in a manner akin to raindrops,

means between said heater unit and said spray head to supply water under pressure and at, or just below, boiling point from said heater unit to said series of dimples, and

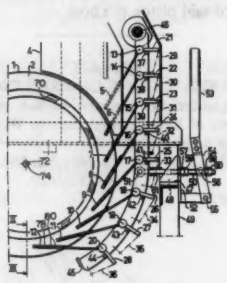
means positioned beneath said bed to receive the brewed coffee or tea, said receiving means being separate from said supply tank.

4,354,428

SPRING ASSEMBLY SYSTEM

Ingve R. Akesson, Helsingborg, Sweden, assignor to Societe d'Assistance Technique Pour Produits Nestle, S.A., Lausanne, Switzerland

Filed Oct. 31, 1980, Ser. No. 202,681
Claims priority, application Sweden, Nov. 15, 1979, 7909426
Int. Cl.³ A23N *15/02*
U.S. Cl. 99—639 **10 Claims**



1. A device for trimming vegetables, especially Brussels sprouts, of the type having:

(a) a frame;

(b) a cutter;

(c) means for rotating said cutter about a cutter axis to move said cutter relative to said frame along a predetermined circular path;

(d) guiding means having an annular groove on its periphery, said groove being concentric with the path of said cutter and juxtaposed therewith;

(e) means for depositing vegetables into said grooves in engagement with said guiding means;

(f) means for rotating said guiding means about said cutter axis to advance the periphery of said guiding means relative to said frame in a downstream direction and thereby advance vegetables in said groove; and

(g) holding means for engaging vegetables advanced by said guiding means to rotate such vegetables during such advancement for engagement with said cutter, said holding means being retained against movement in said downstream direction,

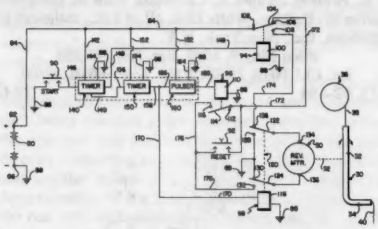
characterized in that said holding means includes a plurality of plates confronting said groove, each such plate being mounted for pivoting movement relative to said frame about an associated pivot axis parallel to said cutter axis, each such plate having a free end remote from the pivot axis of such plate, the free end of each such plate being disposed downstream of the pivot axis of such plate, said plates overlapping one another, said holding means further including means for biasing each of said plates about its pivot axis to urge the free end of such plate towards said guiding means so that the free ends of said plates will engage vegetables advanced by said guiding means.

4,354,429

BALE WRAPPING APPARATUS

Garry A. Boldenow, Peabody; Rex O. Weigand, Newton, and Carl L. Nelms, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 31, 1979, Ser. No. 108,389
Int. Cl.³ B65B *13/04*
U.S. Cl. 100—5 **6 Claims**



1. For use in combination with a baler machine for forming hay into a generally cylindrical bale of the type having means for supporting and rotating the bale and means for supplying and feeding a filament to be wrapped upon at least portions of the bale as the latter is rotated, improved means for controlling the application and pattern of filament wrapped upon the bale including:

shiftable means for guiding a wrapping filament toward various locations along the axial dimension of a bale during rotation thereof,

said guiding means having a first position adjacent one extremity of the bale and a second position adjacent the other extremity of the bale and being movable in either direction therebetween through a number of intermediate positions;

drive means operably coupled with said guiding means for moving the latter in either direction when said drive means is operated in a corresponding direction; and

control means operably coupled with said drive means and operable when actuated for causing said drive means to move said guiding means from said first position to said second position in a single continuous motion during a first predetermined period of time, then to automatically move said guiding means from said second position to said first position in a series of successive motions each of a second predetermined period of time separated by dwells each of a third predetermined period of time at each of a plurality of said intermediate positions,

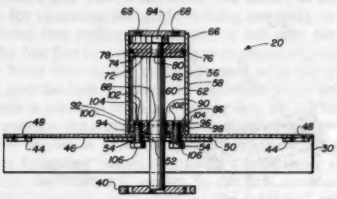
said control means including a main, manually operable actuator device adapted for initial manipulation and release by the operator of the baler machine to start a wrapping cycle consisting of one complete, reciprocatory movement of said guiding means to and from said first position, components responsive to said initial manipulation of the actuator device to actuate said drive means, and means coupled with said components for maintaining the same in a condition actuating said drive means in a

manner to move said guide means through a complete wrapping cycle notwithstanding release of the actuator device by the operator throughout the wrapping cycle.

4,354,430
BALE TENSION APPARATUS

George H. Horiuchi, Kingsburg, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1981, Ser. No. 232,345
Int. Cl.³ B30B *15/00*
U.S. Cl. 100—192 3 Claims



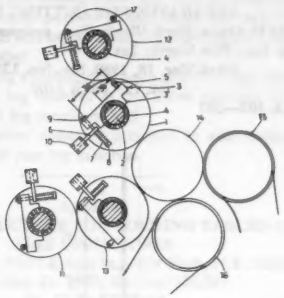
1. In combination with an agricultural baler, a bale tension apparatus comprising:
- a bale chamber operably connected to said baler;
- a bale tensioning member movably connected to said bale chamber for controlling the density of a bale formed in said bale chamber;
- a support mounted on said bale chamber adjacent said bale tensioning member;
- a fluid operated cylinder connected to said support, said cylinder having a sliding piston mounted therein, a rod bearing member contained entirely within the cylinder adjacent an end thereof, and a piston rod connected at one end to said piston and at the other end of said bale tensioning member, said piston rod slidably extending through said rod bearing member;
- a plurality of fastener members extending through said support into said rod bearing member and terminating within said rod bearing member; and
- means for limiting movement of said rod bearing member toward said support.

4,354,431
PRINTING CYLINDER ENGAGEMENT PRESSURE REGULATING SYSTEM

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,598
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932887
Int. Cl.³ B41F *13/20, 13/24, 13/36*
U.S. Cl. 101—247 11 Claims

1. Printing cylinder engagement pressure generation and control system having
- at least two parallel printing cylinders which are to be pressed into surface contact engagement,
- at least one of the cylinders having stub shafts (2) journalled in side walls (18, 28) of the machine,
- a bearing (4) positioned on the at least one of the stub shafts, having a non-rotatable outer bearing element;
- and means (3*a*, 3*b*) pressing against the bearing (4) for applying contact pressure on the at least one cylinder towards the other cylinder, comprising
- an elongated pressure bar (3) forming a lever in engagement with the outer bearing element of the bearing (4) at an intermediate portion of the pressure bar and engaging the bearing at a side of the axis thereof remote from said other cylinder;
- a shell-like or cage-like portion on the pressure bar extending at least in part about the outer bearing element of the bearing (4) to support the bearing over an extended portion of its circumference and transfer pressure therefrom over an extended portion of the bearing;
- a cam forming a pressure stop (5, 17; 23, 24) engaging the pressure bar laterally of the bearing at one side thereof and fixed to an adjacent side wall (18, 28) of the machine, the



cam (5) permitting pressing the pressure bar against the stationary portion of the bearing or relieving pressure therefrom;
- and means (6, 7, 8, 9, 10; 25) for forcing the pressure bar against the bearing, said forcing means engaging the pressure bar laterally of the bearing at the other side thereof to force the cylinders toward each other.

4,354,432
HOT-WIRE IGNITION INITIATOR FOR PROPELLANT CHARGES

Christian G. Cannavo'; Andre' Espagnacq, both of Bourges, and Marie L. Riffault, Sancerre, all of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,673
Claims priority, application France, Oct. 13, 1978, 78 29210
Int. Cl.³ F42B *3/10*
U.S. Cl. 102—202.7 11 Claims

1. Hot-wire ignition initiator characterized by the fact that it consists of:
- a housing having an open cavity
- a filament arranged in said cavity
- a pyrotechnic cell composed:
- of an initiator pyrotechnic composition formed of at least one oxidant and one reducer, said composition being arranged in intimate contact with the filament, the coefficient of sensitivity to impact of which is at least equal to 100 joules, the coefficient of sensitivity to friction of which is at least 100 N, the coefficient of sensitivity to static electricity of which is about 16 mullijoules and the ignition temperature of which is between 250° and 350° C.;
- of an igniter pyrotechnic composition formed of at least one oxidant and one reducer, which composition is arranged in the vicinity of or in contact with the initiator composi-

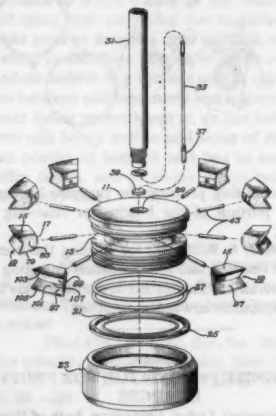
tion, said igniter composition having a coefficient of sensitivity to impact of at least 100 joules, a coefficient of sensitivity to friction of at least 300 N, a coefficient of sensitivity to static electricity of about 50 millijoules and an ignition temperature of between 400° and 750° C.

4,354,433

APPARATUS FOR CUTTING PIPE

Harrold D. Owen, Forth Worth, Tex., assignor to Pengo Industries, Inc., Fort Worth, Tex.

Filed Mar. 18, 1980, Ser. No. 131,096
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—307 4 Claims



1. An annular shaped charge for use in pipe cutting or severing apparatus, which annular shaped charge is made up of eight or more shaped charge segments with each said shaped charge segment comprising a liner portion and open end portions, with the open end portions both before and after assembly each having a radial taper, with said shaped charge segments when assembled being disposed with said open end portions in side to side abutting relation, and with the liners of said shaped charge segments when assembled having a common maximum circumference and a common minimum circumference.

4,354,434

TRACK AND SWITCH CONSTRUCTION FOR SELF-PROPELLED VEHICLES

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 892,774, Apr. 3, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,381
Int. Cl.³ E01B *25/26*
U.S. Cl. 104—103 10 Claims

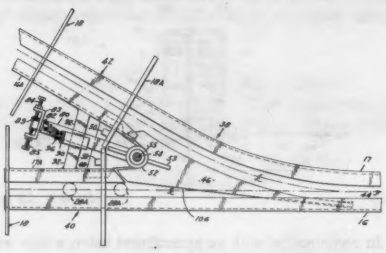
1. In a track construction including a pair of longitudinally extending transversely spaced track members for supporting the wheels of a self-propelled vehicle; arch-shaped yokes connecting the track members together at longitudinally spaced intervals, each yoke having an upper portion extending transversely above the track members; and a conductor rail supported by the upper portion of said yokes in vertically spaced symmetrical relation to the track members; a switch construction for a junction between a main line track and conductor rail converging in one direction with a branch line track and conductor rail; wherein the improvement comprises:

a track switch tongue;

means pivotally mounting the track switch tongue at the junction for movement between main and branch line positions; a conductor rail switch tongue including main and branch line sections of conductor rail;

means pivotally supporting the conductor rail switch tongue at the junction for movement between main and branch line positions in which the main and branch line conductor rail sections are respectively aligned with the main and branch line conductor rails;

the extent of movement of said conductor rail switch tongue being different from the extent of movement of said track switch tongue between the main and branch line positions of said switch tongues;



means for pivotally moving one of said switch tongues between main and branch line positions; and

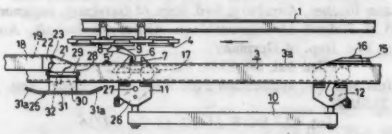
motion transmitting means connected to each of said switch tongues for pivotally and differentially moving the other of said switch tongues in response to pivotal movement of said one switch tongue, said motion transmitting means extending from the switch tongues in a direction opposite to said converging direction of the tracks and conductor rails and being arranged substantially within the vertical spacing between the track members and the conductor rails.

4,354,435

APPARATUS FOR TRANSFERRING CARRIERS AT DISCONTINUOUS PORTION OF POWER LINE FOR POWER-AND-FREE TROLLEY CONVEYOR

Takao Wakabayashi, Shinsenri-Minamimachi, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Dec. 23, 1980, Ser. No. 219,490
Int. Cl.³ B61B *3/00*
U.S. Cl. 104—172 S 1 Claim



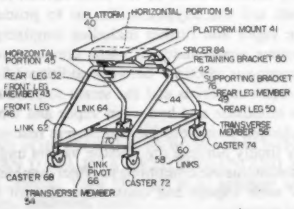
1. In a power-and-free trolley conveyor comprising a first power line and a second power line arranged discontinuously at a specified distance from each other, a free line disposed below the power lines and coextensive with the power lines at the discontinuous portion therebetween, carriers suspended from the free lne and each having a front free trolley and a rear free trolley, the front free trolley being provided with a tilting dog, the rear free trolley being provided at its upper end with a rear projecting member for accumulating following carriers, and pusher dogs pivoted to the drive chain of each of the power lines and arranged at a predetermined spacing, each of the pusher dogs being provided at its rear end with a hooked engaging portion and a side projection extenting from at least one side of the hooked engaging portion, the pusher dog having a stooper portion positioned at its front end to contact the drive chain from below, an apparatus for transferring the carriers at the power line discontinuous portion comprising a

pusher dog disengaging first member, a guide rail for pushing the carrier from behind and a pusher dog disengaging second member arranged in the order mentioned toward the direction of transport of the carriers at predetermined spacings and mounted on a first section of the free line below the first power line, the first member being movable into or out of the path of movement of the side projection on the pusher dog, the guide rail being channel-shaped and having its opening directed inward, a pivotable guide in the form of a channel and attached to the starting end of the guide rail, a guide turning assembly disposed below the pivotable guide, and a guide raising pin extending from a side wall of the front free trolley of each of the carriers for operating the guide turning assembly, so that when the front free trolley of a carrier is led onto the first section of the free line by a pusher dog in engagement with the trolley, the front free trolley in engagement with the pusher dog moves past the first member, the pivotable guide and the guide rail and is released from the pusher dog by the second member to position the rear projecting member of the rear free trolley of the carrier at an intermediate portion of the guide rail, the next following pusher dog being subsequently disengageable from the following carrier by the first member and then movable along the top surface of the guide rail with its front end stopper portion lowered by the action of the guide to cause the stopper portion to strike and engage the rear projecting member of the preceding carrier from behind, the following pusher dog being thereby operable to push the preceding carrier forward from behind, causing the front free trolley thereof to move along an intermediate section of the free line below the power line discontinuous portion and reach a second section of the free line below the second power line, whereupon the following pusher dog is disengaged from the rear projecting member, subsequently permitting a pusher dog of the second power line to pull the front free trolley, whereby the preceding carrier is transferred to the second section of the free line below the second power line.

4,354,436
STAND FOR SUPPORTING ITEMS OF ELECTRONIC EQUIPMENT

Junkichi Shirono, and Katsuhisa Honda, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,908
Claims priority, application Japan, Jun. 19, 1979, 54-76362
Int. Cl.³ A47B *3/08*
U.S. Cl. 108—123 **14 Claims**



1. A stand for supporting items of electronic equipment, comprising:

a front leg member including a first leg and a second leg, and a horizontal portion integrally formed with said first and second legs and having a length;

a rear leg member including a first leg and a second leg, and a horizontal portion integrally formed with said first and second legs and having a length which is shorter than the length of said horizontal portion of said front leg member, the rear leg member being supported by the horizontal portion of said front leg member;

first and second bracket means fixedly attached to said first leg and second leg of said rear leg member, respectively, at the upper parts of said first and second legs, each of said first and second bracket means including retaining bracket means provided at a lower side of each of said first and second bracket means to rotably retain said horizontal portion of said front leg member and prevent displacement of said horizontal portion of said front leg member along said first and second legs of said rear leg member while the first and second leg of said rear leg member lies on said horizontal portion of said front leg member to rotatably retain and support said horizontal portion of said front leg member;

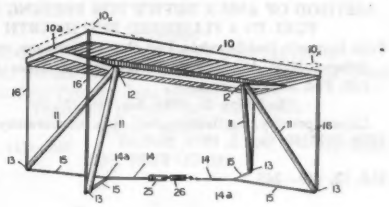
means for keeping a distance between said front leg member and said rear leg member at the lower portions of said front and rear leg members; and

a platform member rotatably attached to said horizontal portion of said rear leg member.

4,354,437
SUPPORT STRUCTURE FOR FOLDING TABLES AND LIKE STRUCTURES

William F. Logan, 70-72 Laight St., New York, N.Y. 10013

Filed Dec. 21, 1979, Ser. No. 106,307
Int. Cl.³ A47B *3/06*
U.S. Cl. 108—153 **19 Claims**



1. In a folding table or like structure having a generally planar table top supported on the floor by multiple legs, a support structure comprising:

(1) multiple points of articulation located below the table top at some distance inward from the edge of the table, at least two of said points being spaced apart from each other;

(2) two splayed legs in V-formation extending each from each point of articulation to points on the floor approximately vertically below the corners of the table top;

(3) a cable network interconnecting the lower ends of said legs and extending from each corner of the table top to the lower end of the leg located vertically below the respective corner;

the arrangement being such that in the assembled state all cables are in tension and the legs are in compression.

4,354,438
METHOD AND APPARATUS FOR COOLING HOT BULK MATERIAL

Georg Beckmann, Vienna, Austria, assignor to Waagner-Biro A.G., Austria

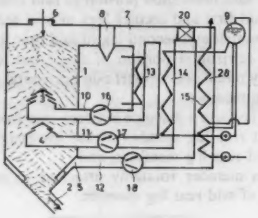
Filed Mar. 6, 1981, Ser. No. 241,382
Claims priority, application Austria, Mar. 12, 1980, 1351/80
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—234 **16 Claims**

1. In a method for cooling hot bulk material, such as glowing coke, clinker, or sinter material, comprising the steps of:

introducing the hot bulk material through an inlet into a vertically oriented cooling tank wherein it flows downwardly under gravity and is discharged from an outlet of the cooling tank;

feeding at least two partial currents of cooling gas into the cooling tank at respective feeding points therein, said feeding points being respectively arranged one over the

other and so that the cooling gas flows upwardly in the tank around the material as the latter flows downwardly to cool the same with the cooling gas being simultaneously heated, the improvement comprising:



the cooling gas partial current fed into the cooling tank at a lower feeding point is at a lower temperature than the cooling gas partial current fed into the cooling tank at a feeding point which is arranged above said lower feeding point.

4,354,439

METHOD OF AND A DEVICE FOR FEEDING SOLID FUEL IN A FLUIDIZED BED HEARTH

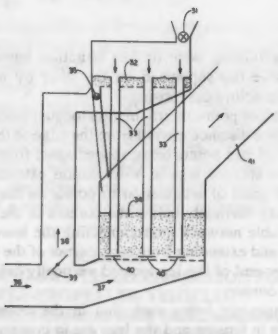
Fritz Baunack, Bad Hersfeld, Fed. Rep. of Germany, assignor to Babcock-BSH AG vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,304

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923250; Oct. 5, 1979, 2940358

Int. Cl.³ F23G *5/00*

U.S. Cl. 110—245 **6 Claims**



1. A device for feeding granular solid fuel into a fluidized bed hearth having a fuel distributing space and a combustion space, comprising means for feeding the fuel into said fuel distributing space; means for admitting a whirling stream of conveying gas to said distributing space to form with the fine grains of fuel a first fluidized bed therein; an array of feeding pipes interconnecting said distributing space with said combustion space to pneumatically feed the fluidized fuel from said fuel distributing space into said combustion space and to form a combustion fluidized bed therein, said fuel distributing space being arranged above said combustion space, said feeding pipes extending downwardly from said fuel distributing space into said combustion space; a gas distributing duct system admitting ;streams of fuel conveying and combustion gas streams, said gas distributing duct system including a main duct having two duct branches communicating respectively with said fuel distributing space and said combustion space, said distributing space having a grated bottom to admit said whirl stream of gas to fluidize the fuel present in said distributing space and to overflow the fluidized fuel through said array of feeding pipes into said combustion space, and further including deflection elements arranged in said combustion space opposite the outlet openings of respective pipes.

4,354,440

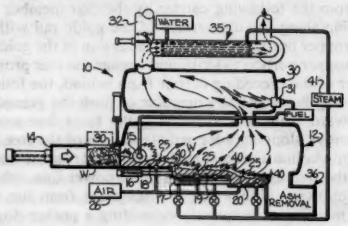
UNDERFIRE AIR AND STEAM SYSTEM AND INCINERATING PROCESS FOR A CONTROLLED STARVED-AIR INCINERATOR

Robert E. McRee, Jr., Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Division of Ser. No. 204,490, Nov. 6, 1980. This application Feb. 3, 1982, Ser. No. 345,428

Int. Cl.³ B09B *3/00*; F23G *7/00*

U.S. Cl. 110—346 **3 Claims**



1. Process of incinerating a wide variety of waste materials in an enclosed incinerator characterized by minimized particulate emissions and clinker formation and by increased thermal efficiency, said process comprising the steps of:

introducing into the incinerator waste materials which are composed primarily of volatile matter, fixed carbon, moisture and non-combustibles;

initially burning the waste materials at low temperatures for vaporizing the volatile matter and moisture and to convert fixed carbon to vaporized volatile matter including supplying air to the burning waste materials at less-than-stoichiometric requirements while creating an exothermic reaction between some of the fixed carbon in the waste materials and the oxygen in the air to produce carbon dioxide vapor and further including supplying steam to the burning waste materials while creating an endothermic "water-gas reaction" between additional fixed carbon in the waste materials and the steam to produce volatile carbon monoxide and hydrogen vapor and while absorbing undesired heat from the exothermic reaction;

thereafter finally burning the volatile vapors under greater-than-stoichiometric conditions to effect complete combustion of such vapors and conversion thereof to gaseous organic materials;

emitting the gaseous organic materials from the incinerator and removing the non-combustible inert residue from the incinerator for disposal; and

moving the waste materials in a longitudinal path of travel during said initial burning of the waste material, while alternately supplying the air and the steam to the moving and burning waste materials at spaced locations along the path of travel;

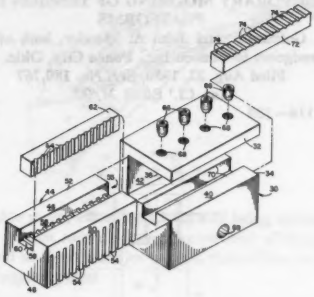
whereby, localized high temperatures during the initial burning step are minimized to lessen clinker formation and vaporization of the non-combustibles for minimizing the particulate emission rate from the incinerator and conversion of fixed carbon into vaporized volatile matter is maximized for maximizing the thermal efficiency of the incinerator.

4,354,441

MOUNTING BLOCK FOR TUFTING MACHINE GAUGE PARTS

Kenneth Hurst, 3222 S. Mission Oaks Dr., Chattanooga, Tenn. 37412

Filed Feb. 2, 1981, Ser. No. 230,507
Int. Cl.[3] D05C *15/00*
U.S. Cl. 112—79 R 9 Claims



1. A mounting block for a tufting machine for carrying a plurality of gauge parts each having an elongated mounting portion of substantially rectangular cross section, said block comprising a body member having a pair of elongated spaced flanges, a gauge parts retainer having elongated surfaces spaced apart by a distance substantially equal to the spacing between said flanges and positioned intermediate said flanges, means defining an elongated channel in one of said surfaces, means defining a plurality of spaced slots in said retainer extending transversely to said elongated surfaces, each of said slots having a cross sectional configuration corresponding to that of the mounting portion of said gauge parts and extending from the other of said elongated surfaces to and opening into said channel, and gauge parts securing means including a clamping member in said channel for securing said gauge parts in respective slots and for securing the retainer with the body member.

4,354,442

METHOD FOR STORING SEWING MACHINE STITCH PATTERN DATA IN A BYTE ORGANIZED MEMORY

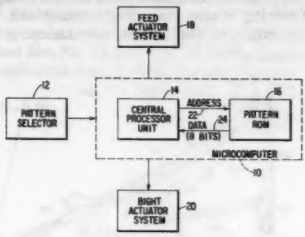
Leonard I. Horey, West Orange, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 22, 1980, Ser. No. 199,147
Int. Cl.[3] D05B *3/02*; G05B *19/18*
U.S. Cl. 112—158 E 8 Claims

7. In an electronically controlled stitch pattern sewing machine that utilizes a first set of five ordered bits of bight data for controlling lateral needle position and a second set of five ordered bits of feed data for controlling work feeding for each stitch, said sewing machine including a memory organized in addressable eight bit bytes, a method for storing the bight data and the feed data for a plurality of stitches comprising the steps of:

storing the bight data and one bit of the feed data for a first stitch in a first byte of the memory;

storing the remaining four bits of the feed data for the first stitch and four bits of the bight data for a second stitch in a second byte of the memory; and



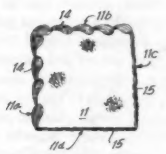
storing the remaining bit of the bight data and the feed data for the second stitch in a third byte of the memory.

4,354,443

AFGHAN CONSTRUCTION AND METHOD

David M. Abrahamson, Woodbury, N.Y., assignor to Dason International Products Inc., Hicksville, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,382
Int. Cl.[3] B32B *7/08*
U.S. Cl. 112—440 10 Claims



1. An afghan comprising a plurality of peripheral afghan constituents; a plurality of interior afghan constituents; and means for joining said peripheral and interior constituents in side-by-side relation into an afghan with said peripheral afghan constituents defining the periphery of said afghan, each of said peripheral afghan constituents being formed integrally with a first border region unconnected to another of said constituents and defining the outer border of said afghan and a second border region at which said peripheral afghan constituents is joined to other of said constituents, said first border regions having a configuration at least in part wider and different from said second border regions to define a simulated border for said afghan.

4,354,444

SAIL HANDLING APPARATUS

Mario J. Puretic, 259 - 6th Ave. N., Monte Cristo Isle, Tierra Verde, Fla. 33715

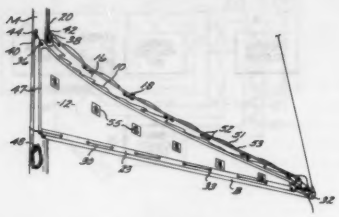
Filed Feb. 23, 1981, Ser. No. 237,519
Int. Cl.[3] B63H *9/10*
U.S. Cl. 114—105 4 Claims

1. Sail handling apparatus for use with a boat having a mast, a boom, and a sail supported by said mast and boom, said apparatus comprising:

a pair of aligned, generally triangular panels, each having a horizontal leg attached along said boom and a vertical

front edge normally attached to said mast above said boom, the rear-end of each said panel being shorter than its front edge, with said panels normally straddling said boom to define an open-topped sail-receiving pocket;

and fastening means operatively interposed between the upper edges of said panels, said fastening means being



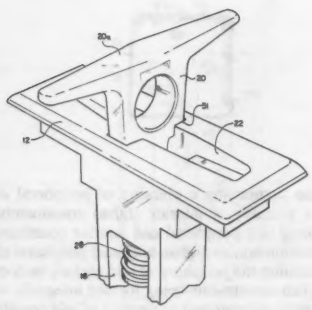
open when said sail is in a raised position, with said sail falling into the pocket between said panels as said sail is lowered onto said boom from its raised position, whereafter the upper portion of said panels are overlapped to cover said sail and said fastening means are engaged to secure said panels around said lowered sail and onto the top of said boom.

4,354,445

RETRACTABLE LIFT RING

Charles F. Kafka, Bradenton, and Robert S. Kafka, Maitland, both of Fla., assignors to Meacham Marine Products, Inc., Sarasota, Fla.

Filed Sep. 25, 1980, Ser. No. 190,895
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 **11 Claims**



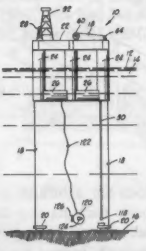
1. A retractable lift ring device for installation in the deck of a boat or the like that may from time to time need to be lifted, said lift ring device comprising a slotted deck plate adapted to be affixed in surrounding relation around an aperture in the deck, an elongate structural member secured to the underside of said deck plate at a mid portion thereof, and arranged to extend into the aperture, said elongate structural member having a major dimension approximating the major dimension of said slotted deck plate, with said deck plate and said elongate structural member together forming a component substantially of a T-shaped configuration, a lift ring operatively mounted in the slot in said deck plate, with its upper portion normally being substantially flush with the upper surface of said deck plate, said lift ring having a lower, rod-like portion extending downwardly into said elongate structural member and being slidable therein, said lift ring being able to be manually lifted to a position extending above said deck plate, at which time said rod-like portion has moved upwardly to some extent in said elongate structural member, and spring bias means operatively associated with said rod-like portion and said elongate structural member, the spring bias force being caused to increase as said lift ring is lifted out of said slotted deck plate, said spring bias means serving to bring about prompt return of said lift ring to its recessed position when the lifting force has been removed.

4,354,446

TEMPORARY MOORING OF TENSION LEG PLATFORMS

Riley G. Goldsmith, and John A. Mercier, both of Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 22, 1980, Ser. No. 180,767
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **12 Claims**



9. The method of temporarily mooring a floating structure, said method comprising steps of:

(a) connecting first ends of a plurality of temporary mooring lines to anchor means positioned on a floor of a body of water;

(b) connecting a plurality of pendant lines to second ends of said plurality of temporary mooring lines;

(c) connecting said plurality of pendant lines to retrieval means attached to said floating structure;

(d) retrieving said plurality of pendant lines and a portion of each of said temporary mooring lines onto said floating structure until said floating structure is located approximately at a position directly above said anchor means;

(e) applying a horizontal force to said floating structure to move it horizontally away from said position directly above said anchor means a distance sufficient to apply a temporary tension load to each of said temporary mooring lines great enough to prevent snap loads from being imposed on said temporary mooring lines due to cyclical forces acting thereupon; and

(f) tensioning said plurality of temporary mooring lines.

4,354,447

EXTENDABLE BOWSPRIT PULPIT FOR A FISHING BOAT

Lennart C. Hultgren, 40 Ryder St., Buzzard's Bay, Mass. 02532

Filed Aug. 27, 1980, Ser. No. 181,717
Int. Cl.³ B63B *35/14*
U.S. Cl. 114—255 **5 Claims**

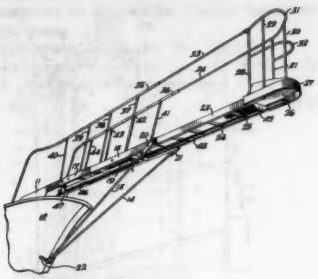
1. A slidably extendable bowsprit pulpit for mounting on the bow of a fishing boat comprising:

an elongated pulpit having a horizontal deck extending forwardly of the boat's bow deck and two parallel deck-supporting members each having one end affixed to the boat's bow and extending forwardly beneath said horizontal deck,

a slidable pulpit extension having a horizontal deck and two parallel deck-supporting members, each member being slidably mounted on one of the two deck-supporting members of the elongated pulpit, and

a rigid support member having one end affixed to the forward

end of said elongated pulpit and its other end affixed to a bracket mounted on the boat's bow beneath the bow deck,



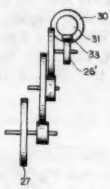
said slidable pulpit extension capable of being retracted to lie mainly within said elongated pulpit and of being slidably extended so that the major portion thereof lies forwardly of the elongated pulpit.

4,354,448

MANUALLY DRIVEN GENERATING MECHANISM FOR DOORBELLS

Chun N. Lin, No. 329, Chungshan Rd., Ching Shui Chen Tai-chung, Taiwan

Filed Aug. 26, 1980, Ser. No. 181,347
Int. Cl.³ G10K *1/067*
U.S. Cl. 116—161 **7 Claims**



1. A manually driven generating mechanism for doorbells, comprising:

a dynamo;

a spring;

a means to stress said spring;

a train of acceleration gears mechanically connected to said means;

a clutching device which controls the engagement or disengagement between said means and the first gear of said acceleration gears;

a relatively heavy flywheel, with its two ends respectively connected to the last gear of said acceleration gears, and to the rotary shaft of said dynamo;

a buzzer energized by said dynamo;

said means being able to be conveniently operated by hand to bring said spring into stressed state;

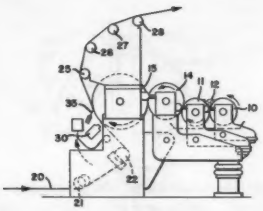
said clutching device enabling said means and the first gear of said accelerating gears to connect mechanically with each other before the stressed spring resumes its original, unstressed position, and to disconnect with each other when said spring reaches its unstressed state;

4,354,449

TWO SIDED COATER

Stanley C. Zink, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Continuation-in-part of Ser. No. 921,502, Jul. 3, 1978, Pat. No. 4,231,318, and Ser. No. 34,216, Apr. 30, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,560
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—126 **3 Claims**



1. Apparatus for coating a web of paper which is adapted to apply different coating materials to the opposite sides of the web in a single pass through the apparatus, comprising:

(a) a coating roll mounted with the axis thereof in fixed position,

(b) a fixed guide roll cooperating with said coating roll to maintain an otherwise unsupported lead-in portion of the web to be coated travelling generally upwardly from said guide roll to said coating roll,

(c) a second guide roll supporting a lead-off portion of the web travelling generally upwardly from said coating roll and cooperating with said first guide roll to establish the extent of wrap of said coating roll by the web.

(d) means mounting at least one of said guide rolls for adjustment with respect to said coating roll to vary the extent of wrap of said coating roll by the web,

(e) applicator means for applying a metered quantity of a coating material to said coating roll at a location remote from the portion of said coating roll wrapped by the web for application of such coating material by said coating roll to the surface of the web which contacts said coating roll,

(f) non-contacting coating fountain means positioned to direct ametered quantity of a coating material against the other surface of said lead-in portion of the web, and

(g) a doctor blade mounted to engage said other surface of the web along the portion thereof wrapping said coating roll to remove excess quantities of the coating material applied to the web by said fountain means.

4,354,450

JET LAYER GRANULATOR

Takashi Nagahama; Nobuyuki Matsumoto; Masaki Naruo, all of Mobara; Susumu Nioh, Tokyo; Hiroshi Hirayama, Funabashi; Tetsuzo Honda, Funabashi; Yoshinori Sato, Funabashi; Kenji Toyama, Chiba, and Gisaburo Shiotu, Kawasaki, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,846
Claims priority, application Japan, May 7, 1980, 55-60369; May 7, 1980, 55-60370; Jun. 17, 1980, 55-82000; Jun. 17, 1980, 55-82001; Aug. 1, 1980, 55-106304; Aug. 1, 1980, 55-106305
Int. Cl.³ B05B *17/00;* B05C *5/00;* B05D *7/00*
U.S. Cl. 118—303 **17 Claims**

1. A granulator, comprising

an elongated, substantially vertical vessel having at its lower portion a downwardly converging funnel of inverted frusto-conical shape, said funnel being adapted to contain a bed of particles;

a gas-supply conduit extending outwardly from the bottom

of said funnel, said gas-supply conduit defining a gas-jetting opening at its upper end which opening is coaxial with the central axis of said funnel, said conduit being adapted for supplying through said gas-jetting opening an upwardly flowing, high velocity stream of gas effective to entrain particles present in the lower portion of the bed so that the gas stream and particles entrained therein flow coaxially upwardly through said funnel and through the central portion of the bed into the central region of the upper portion of said vessel above the bed;

liquid-supply pipe means extending upwardly through the central portion of said gas-jetting opening, said supply pipe means having spraying means at its upper end for spraying droplets of liquid material upwardly into said funnel and through the path of said gas stream so that said liquid droplets contact and adhere to said particles in said funnel and enlarge the size thereof to form granules, said spraying means being disposed within said funnel above the upper end of said gas-jetting opening and being located a vertical distance above said gas-jetting opening which distance is less than the internal diameter of said gas-jetting opening.

4,354,451

DEVICE FOR SPRAY-COATING A WORKPIECE WITH POWDER PARTICLES

Gerhard F. Vöhringer, and Gerhard Hestermann, both of Friedrichshafen, Fed. Rep. of Germany, assignors to ESB Elektrostatische Sprüh- und Beschichtungsanlagen G.F. Vöhringer GmbH, Meersburg, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,700

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003158

Int. Cl.³ B05C *15/00*

U.S. Cl. 118—326 **9 Claims**

1. A device for spray-coating a workpiece with powder particles, comprising:

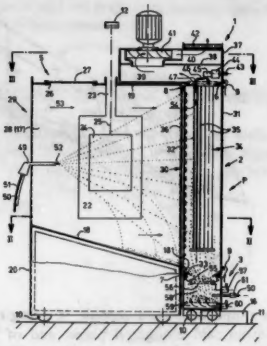
a generally prismatic booth with a substantially fully open front side, a substantially fully open rear side, a pair of sidewalls, a roof and a bottom bounding a spray chamber;

a powder-collecting unit having a housing detachably secured to said booth at said rear side thereof, said housing being substantially fully open toward said spray chamber and forming a recovery compartment below the level of said bottom including a strainer overlying a fluidized bed;

a set of tubular filter elements with air-permeable peripheral surfaces disposed in said housing above said recovery compartment opposite said rear side for intercepting powder particles passing generally horizontally through said spray chamber;

suction means communicating with the interior of said filter elements for drawing air from said spray chamber through said peripheral surfaces, thereby setting up a generally horizontal air flow traversing said spray chamber from said front side to said rear side; and

conduit means extending from said recovery compartment to an electrostatic spray gun trainable through said front side upon a workpiece in said spray chamber for enabling



said workpiece to be coated with particles from said powder-collecting unit.

4,354,452

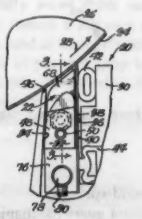
EXPANDABLE EDGE DAM ASSEMBLY FOR PAPER COATING APPARATUS

Harvey J. Patterson, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Apr. 21, 1981, Ser. No. 256,102

Int. Cl.³ B05C *3/18*

U.S. Cl. 118—413 **14 Claims**

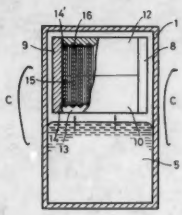


1. In combination with an applicator for applying a coating liquid to a moving web of paper, said applicator having a body defining a chamber therein with an elongate opening to said chamber positionable generally adjacent to and transversely of the web, said chamber receiving coating liquid and directing the same through said opening and onto the web, an improved edge seal assembly comprising seal means of a flexible and expandable material mounted in said opening toward a longitudinal end thereof; and means for introducing fluid under pressure into said seal means to expand the same for sealing with said body on opposite sides of said chamber opening and for extending toward and closely adjacent to but spaced from the paper web, whereby said seal means seals the side end of said opening and controls leakage of coating liquid therepast.

4,354,453
SUBSTRATE HOLDER FOR LIQUID PHASE EPITAXIAL GROWTH

Susumu Koike, Kawachinagano, and Hitoo Iwasa, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 2, 1980, Ser. No. 109,110
Claims priority, application Japan, Jan. 12, 1979, 54-3129
Int. Cl.³ B05C *13/02, 5/00, 3/02, 3/109*
U.S. Cl. 118—426 8 Claims



1. An apparatus for liquid phase epitaxial growth comprising, in combination:

a substrate holder having a cylindrical space inside thereof, the inside wall of said cylindrical space having at least one annular groove with a V-shaped cross-section to hold at least one substrate therein for each annular groove, respectively, by uniformly receiving the peripheral edges of both faces of the substrate, the pitches of each said annular groove being larger than thicknesses of each said substrate,

said substrate holder including an opening for introducing and withdrawing at least one semiconductor solution into an out of said cylindrical space thereof,

said substrate holder comprising a semi-cylindrical main part having said at least two annular grooves therein and a semi-cylindrical lid part also having at least two annular grooves therein cooperating therewith, the annular grooves of said lid part having the same pitch as the annular grooves of said main part, whereby when the main part and the lid are put together the correspondingly matched annular grooves are contiguous, establishing uniform boundary conditions around the entire periphery of each said substrate when contacted with the semiconductor solution,

a boat in liquid communication with said substrate holder via said opening and having a semiconductor solution reservoir at the lower portion thereof with the substrate holder at the upper portion thereof, and

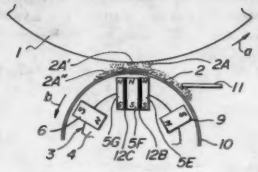
means to turn said boat upside down thereby contacting said semiconductor solution with each said substrate.

4,354,454
DEVELOPING DEVICE WITH MAGNETIC POLE HAVING MAGNETIC SPACER MEMBERS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,294
Claims priority, application Japan, Dec. 8, 1979, 54/158712
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 9 Claims

1. In a magnet roll developing device including a magnet roll composed of a roll-shaped supporting member made stationary with respect to a surface to be developed, said supporting member including a developing main magnetic pole opposed to the surface to be developed and a plurality of transfer magnetic poles, a non-magnetic rotary sleeve rotatably mounted around the outer peripheral surface of the magnet roll and a doctor blade for controlling a thickness of a developing agent layer held on the non-magnetic rotary sleeve, the improvement in which the developing main magnetic pole is divided into a plurality of magnet portions each having the same magnetic pole opposite the surface to be developed, said magnet portions spaced from each other to provide at least one space into which is arranged a spacing member composed of a magnetic body or magnet having a weak magnetic force in a direction such that the surface of said weak magnet is opposite in polarity to the poles of said magnet portions, a portion of the magnetic lines of force starting from the magnet surface of each of

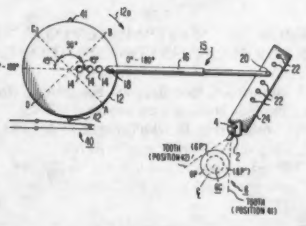


said magnet portions being directed toward said spacing member for forming an area in which magnetic lines of force are low in density near said spacing member, and the thickness of the developing agent layer held on said non-magnetic rotary sleeve being suitably adjusted to form at the magnet surface of each of said magnet portions an independent brush fur-like portion of the developing agent, each of said fur-like portions independently acting on the surface to be developed.

4,354,455
APPARATUS FOR OSCILLATING A GAS MANIFOLD IN A ROTARY DISC REACTOR

Gary W. Looney, Bordentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,858
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—700 13 Claims



1. An apparatus for oscillating a rotatable gas manifold in sweeps between two extrema within a rotary disc reactor, comprising:

an electric motor having a rotating shaft;

variable sweep means connecting the shaft to the gas manifold, for converting rotation of the shaft into reciprocating oscillation of the gas manifold between two extrema; and

a control means for varying electric motor speed, whereby oscillation speed of the gas manifold within a single sweep between its two extrema may be varied;

said sweep means further including:

a circular plate attached to the motor shaft and rotating therewith, the plate being perpendicular to the shaft and having at least one hole and two teeth projecting radially outwardly from the shaft;

a connecting rod with a first end pin and a second end pin, the first end pin being engagable with a single one of said at least one hole in the plate; and

a lever arm connected to the gas manifold and rotating therewith, the lever arm having at least one hole, the

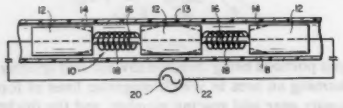
second end pin of the connecting rod being engagable with a single one of said at least one hole in the lever arm; said control means further including a fixed switch which is actuated by said teeth on said plate.

4,354,456

APPARATUS FOR USE IN MAKING A SELECTIVELY VAPOR DEPOSITION COATED TUBULAR ARTICLE

Bruce D. Campbell, Portola Valley, and Lynn O. Chapman, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 24, 1981, Ser. No. 247,042
Int. Cl.³ B05B 5/02
U.S. Cl. 118—721 **12 Claims**



1. An apparatus for use in selectively coating the interior surface of a tubular article having a longitudinal axis, comprising:

a pair of axially aligned spaced apart electrically insulated masks having opposed masking surfaces, each masking surface being generally planar and generally perpendicular to the longitudinal axis, the periphery of the masks being complimentary with the tubular article; and

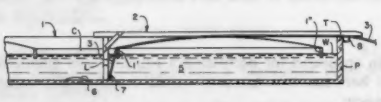
a vapor deposition coating means for applying a generally uniform coating of electrically conductive material on the interior surface of the tubular article, the coating means connected to the opposed surfaces of the masks and positioned axially therebetween.

4,354,457

METHOD OF AND APPARATUS FOR ENABLING ACCESS TO THE INTERIOR OF FISH-FARMING PONDS AND THE LIKE

Albert H. Knowles, Concord, N.H., assignor to Robert Harvey Rines, Concord, N.H., a part interest

Filed May 14, 1981, Ser. No. 263,854
Int. Cl.³ A01K 61/00
U.S. Cl. 119—3 **12 Claims**



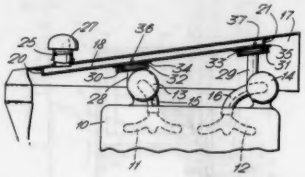
1. A method of providing access to the interior of a fish-farm pond provided with a water-contacting cover having an internal opening, as for purposes of internal maintenance and the like, that comprises, pushing a longitudinal walk-way provided with terminal transversely depending leg means with a strand attached near its bottom end, inwardly toward the interior of the pond, with the leg means passing over the cover until reaching the lip of the internal cover opening; dropping the leg means over said lip down into the water at said opening to support the walk-way above the cover, thereby enabling access along the walk-way to the internal region of the pond; and thereafter pulling the strand outward of the pond and against the said lip of the cover opening to elevate the leg means through and then clear of the said internal opening lip while pivoting the walk-way downwardly and then slidingly back over the cover.

4,354,458

TRACTOR ENGINE AIR SUPPLY MEANS

Cecil T. Bury, Huddersfield, England, assignor to David Brown Tractors, Ltd., Huddersfield, England

Filed Sep. 8, 1980, Ser. No. 184,825
Claims priority, application United Kingdom, Sep. 14, 1979, 7931912
Int. Cl.³ B60K 13/02
U.S. Cl. 123—52 M **9 Claims**



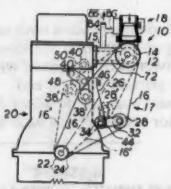
1. A tractor having an internal combustion engine containing at least two air cleaners with each air cleaner having an inlet and an outlet, the outlet of each air cleaner communicating with an inlet of a respective manifold of the engine, a hood displaceable from an operative position covering the engine and having an interior and exterior, and an elongated trough with closed ends which said trough is secured lengthwise to the interior of the hood as to form a longitudinally extending air supply ducting with said hood, said ducting having at its front end an intake opening which directly communicates with the exterior of the hood and also having at least two exit holes spaced apart from each other and rearwardly from the intake opening which each of said holes communicates, when the hood is in its operative position, with a respective inlet of one of the air cleaners by way of a resilient ring.

4,354,459

NON-THROTTLING CONTROL APPARATUS FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

Joel W. Maxey, 447 Palmtree Dr., Bradenton, Fla. 33507

Filed Jun. 20, 1979, Ser. No. 50,483
Int. Cl.³ F01L 7/00
U.S. Cl. 123—80 BA **7 Claims**



1. An internal combustion engine having a driven shaft operable in fixed rotational relationship with a driving shaft, of the type having a phase shift mechanism for varying the angular relation between said shafts, and of the type having a valve assembly operably interconnected with said phase shift mechanism for modulating fluid flow, on a time-duration basis, from a fuel mixture feed to a cylinder intake means of said engine, wherein the improvement comprises,

a non-rotatable connector means,

a rotatable rotor means,

a non-rotatable valve passage means,

said connector means, rotor means and valve passage means serially connected to one another and disposed in fluid flow regulating disposition between said fuel mixture feed and said cylinder intake means,

a drive element means connected in driven relation to the

driving shaft of the engine and in driving relation to said rotor means,

said drive element means disposed to define a path of travel between said driving shaft and said rotor means,

said phase shift mechanism comprising a line-of-centers defined by an imaginery line extending substantially between the respective axes of rotation of said driving shaft and said rotor means,

a phase shift assembly interconnected to said drive element and movably mounted relative thereto for selective positioning of said path of travel relative to said line-of-centers to achieve the continuous modulation of said fuel mixture flow to said cylinder intake means and thence to the engine cylinders, and

said phase shift assembly further comprising an independently formed control assembly, independently movably disposed on one side of said line-of-centers and interconnected to said drive element, a tension assembly independently formed relative to said control assembly, said tension assembly independently movably disposed on the opposite side of said line-of-centers relative to said control assembly to selectively control disposition of said path of travel relative to said line-of-centers upon selective manipulation of said control assembly.

4,354,460

VARIABLE VALVE EVENT ENGINE

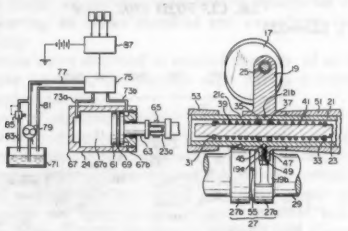
Hisao Mae, Susono; Masaaki Takizawa, Mishima, and Noboru Matsubara, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,629

Claims priority, application Japan, May 9, 1979, 54-55635

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **9 Claims**



1. A variable valve event engine comprising:

a rocker shaft disposed along said engine;

a camshaft disposed parallel to said rocker shaft and synchronized with a crankshaft of said engine;

a plurality of cams having cam profiles different from each other fixed on said camshaft so as to be adjacent to each other;

a rocker arm for actuating a valve of said engine, said rocker arm being pivotably and slidably disposed on said rocker shaft;

a rocker arm slide shaft disposed parallel and longitudinally movable with respect to said rocker shaft;

a hydraulic member for longitudinally moving said rocker arm slide shaft;

a control valve for actuating said hydraulic member in accordance with changes in the operating conditions of the engine;

a spring connecting said rocker arm slide shaft with the rocker arm for transmitting the movement of said rocker arm slide shaft to said rocker arm to move said rocker arm between logitudinally spaced, predetermined positions, each being aligned with one of said cams;

a first detector for sensing the temperature of the lubricant utilized in said hydraulic member;

a second detector for sensing the rotational speed of the engine;

a third detector for sensing the load of said engine;

a control, connecting said control valve with said first, second and third detectors, for switching said control valve in accordance with the rotational speed and the load of the engine detected by said second and third detectors only when said first detector detects that the temperature of the lubricant is higher than said predetermined temperature.

4,354,461

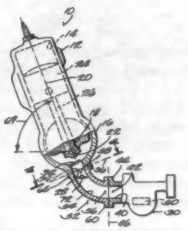
TWO-CYCLE INTERNAL COMBUSTION ENGINE INCLUDING HORIZONTAL CRANKSHAFT

Richard A. Heismann, Knoxville, and Richard L. Morris, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 4, 1980, Ser. No. 175,312

Int. Cl.³ F02F *7/00*; F02B *33/04*

U.S. Cl. 123—195 AC **8 Claims**



1. A two-cycle, internal combustion engine comprising a cylinder, a crankcase extending from said cylinder and supporting a generally horizontally extending crank shaft having an axis, a piston connected to said crankshaft and mounted for reciprocative movement in said cylinder along an axis extending generally perpendicularly to the crankshaft axis at an angle to the horizontal, means on said crankcase defining an air and/or fuel inlet including a flange disposed in a first plane extending generally parallel to the crankshaft axis and generally perpendicularly to the piston axis, a manifold having an interior passage, an outlet flange which is disposed in said first plane and which is connected to said crankcase inlet flange, and an inlet flange disposed in a second plane which extends generally vertically and which is angularly related to said first plane at said angle, and a carburetor including an air induction passage having an outlet flange which is disposed in said second plane and which is connected to said manifold inlet flange, said carburetor including a float and being operable to regulate fuel flow into said air induction passage when said second plane is vertical.

4,354,462

INTERNAL COMBUSTION ENGINE

Jürgen Kuechler, An den alten Graeben 9, D-3556 Weimar, Lahn 2, Fed. Rep. of Germany; Reinhold Gäbler, deceased, late of Marburg an der Lahn, Fed. Rep. of Germany, and by Inge Funk nee Gäbler, legal representative, Piegenstrasse 43, D-3550 Marburg, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,187

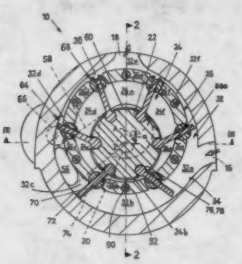
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851346

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—241 **7 Claims**

1. An internal combustion engine having a stationary, substantially cylindrical casing, comprising: inlet and outlet openings for the intake of fuel and air supply and for exhausting combustion products, respectively; a rotor and a shaft; top and

bottom cover plates having bearings for supporting said shaft which carries said rotor; a plurality of vanes defining chambers of variable volume, said vanes being sealed along said top and bottom plates; tiltable fulcrum slides through which said vanes pass; a ring structure that surrounds the rotor so as to separate and seal an inner group of said chambers from an outer group of said chambers, said outer group of chambers forming a boosting system and said inner group of chambers forming a compressing system, said fulcrum slides being seated in said ring structure, and said ring structure being arranged for rotation about a first stationary axis which is parallel to a second stationary axis about which the rotor is arranged for rotation, said ring structure including a base disk supporting member; swivel bearings associated with said rotor for allowing said vanes to move in a phase-variable rotatory relation thereto, the tips of said vanes being spaced from the inner wall of said cylindrical casing, said inner and outer groups of chambers



having flow communication at predetermined peripheral zones; ignition means for igniting a combustible gas mixture in the smallest inner chamber; a common driving means joined to said ring structure and said rotor so as to maintain them in synchronous rotation, said common driving means including a double-disk toothed wheel meshing both with a first toothed wheel attached to said shaft and with a second toothed wheel axially spaced from said first toothed wheel and attached to the base disk supporting member of said ring structure for rotation therewith, said first and second toothed wheels having identical pitches and identical numbers of teeth, and said base disk being axially extended by a flange collar; a lunate passage being formed between the periphery of said rotor and said base disk, said lunate passage being stationary with respect to the rotating groups of chambers; and a channel formed in at least one of said top and bottom cover plates for periodical flow communication between said outer and inner groups of chambers by means of said lunate passage.

4,354,463

DEVICE FOR IMPROVING COMBUSTION EFFICIENCY OF MIXTURE IN FOUR CYCLE INTERNAL COMBUSTION ENGINE

Junji Otani, Oomiya, and Yasuo Ikenoya, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

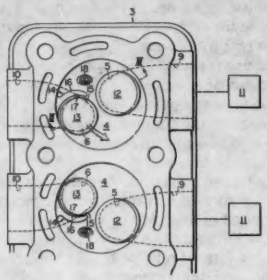
Filed Jun. 6, 1980, Ser. No. 157,188

Claims priority, application Japan, Jun. 9, 1979, 54-72663; Jun. 26, 1979, 54-80938; Jul. 19, 1979, 54-91962; Aug. 6, 1979, 54-99967; Aug. 6, 1979, 54-99968; Sep. 18, 1979, 54-119816; Sep. 20, 1979, 54-120978; Sep. 20, 1979, 54-120979

Int. Cl.³ F02M *25/06;* F02B *29/02*

U.S. Cl. 123—308 **36 Claims**

1. A device for improving combustion efficiency of mixture in a four cycle internal combustion engine comprising: a cylinder slidably receiving a piston, a combustion chamber defined on the top of said piston, an intake port opening to said combustion chamber and communicating with an intake passage, an intake valve fitted in said intake port, an exhaust port opening to said combustion chamber and communicating with an exhaust passage, an exhaust valve fitted in said exhaust port, a fuel supply means disposed in said intake passage for supply of an air-fuel mixture, a swirl generating guide wall formed around said exhaust port and projecting inwardly from a wall



defining said combustion chamber so that on the intake stroke of said piston, a part of burnt gas is introduced from said exhaust passage into said combustion chamber through said exhaust port unclosed by said exhaust valve to impinge against said guide wall thereby to produce a swirl.

4,354,464

AIR INTAKE ARRANGEMENT FOR DIESEL ENGINE

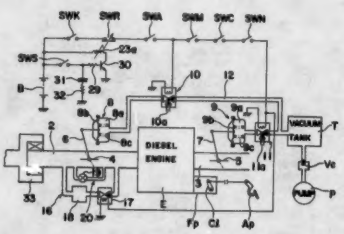
Teruhiro Fujita, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 1, 1980, Ser. No. 211,714

Claims priority, application Japan, Dec. 8, 1979, 54-159649; Jan. 16, 1980, 55-3931

Int. Cl.³ F02D *9/02, 9/04*

U.S. Cl. 123—323 **7 Claims**



1. In a system including a diesel engine and a starter motor for starting the diesel engine, the diesel engine having an air intake passage for introducing air into a combustion chamber of the diesel engine, an exhaust passage, and an injection nozzle means, directed into the combustion chamber, for supplying fuel into the combustion chamber so as to effect combustion by injecting the fuel into the air which is compressed in the combustion chamber so as to be raised in its temperature, an improved air intake arrangement which comprises:

means, including an air intake shutter valve, provided in the air intake passages, for controlling the size of the air passage area of the air intake passage;

means for establishing an intake negative pressure at the downstream side of said shutter valve of between 100 and 400 mmHg by closing said shutter valve during idling of the diesel engine, and for fully opening said shutter valve during medium to high engine loads; and

said controlling means including a correction means, responsive to both the temperature of the diesel engine and operation of the starter motor, for increasing the size of the air passage area of the air intake passage while the diesel engine is warming up and during operation of the starter motor, to

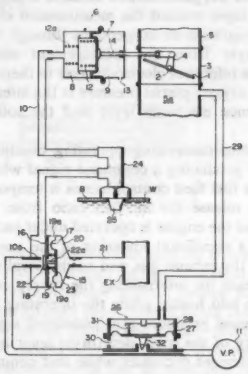
a size which is larger than the size of the air passage area of the air intake passage while the diesel engine is idling after the diesel engine has warmed up.

4,354,465

DIESEL THROTTLE VALVE CONTROL SYSTEM

Koichi Takeuchi, Fujisawa; Teruo Nakada, Yokohama, and Mitsuo Iwahara, Ebina, all of Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,876
Int. Cl.[3] F02D 9/00
U.S. Cl. 123—339 8 Claims



1. An intake air throttle valve control system for a diesel engine having an intake manifold and an exhaust manifold comprising:

a throttle valve disposed to control the flow of air in said intake manifold, said throttle valve having a control rod coupled thereto;

a source of negative pressure;

a pressure responsive actuator coupled to said control rod to operate said throttle valve, said actuator having an atmospheric pressure chamber and a negative pressure chamber, a diaphragm separating said atmospheric pressure chamber and said negative pressure chamber, and spring means biasing said diaphragm towards said atmospheric pressure chamber;

an engine temperature sensing valve means having inlet and outlet ports, said engine temperature sensing valve means being operatively positioned to operate in response to the engine temperature, said outlet port of said engine temperature sensing valve means being in fluid communication with said negative pressure chamber of said actuator;

a vacuum cut-off valve having inlet and outlet ports, said outlet port of said vacuum cut-off valve being in fluid communication with said inlet port of said engine temperature sensing valve means, said vacuum cut-off valve venting an outlet portion thereof to the atmosphere in response to a predetermined engine operational parameter;

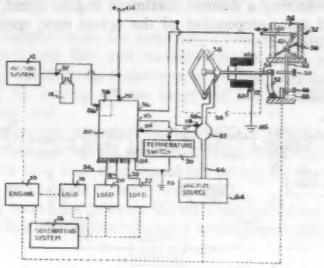
a negative pressure control valve having an inlet port and an outlet port, said outlet port of said negative pressure control valve being in fluid communication with said inlet port of said vacuum cut-off valve and said inlet port being coupled to said source of negative pressure, said negative pressure control valve operating in response to a pressure in said intake manifold at a point downstream of said throttle valve, and said negative pressure control valve introducing atmospheric air into an outlet port thereof in an amount in proportion to the magnitude of negative pressure at said point downstream of said throttle valve in said intake manifold.

4,354,466

IDLE SPEED CONTROLLER

Carl K. Dudley, Petersburg, Mich., and William J. Roberts, Toledo, Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Jun. 8, 1981, Ser. No. 271,749
Int. Cl.[3] F02D 1/04
U.S. Cl. 123—339 10 Claims



1. An idle speed control for an internal combustion engine having a throttle valve and an ignition system, for permitting a lowered idle speed setting, comprising:

a movable idle speed stop member mounted on said engine for opening the throttle valve of the engine in response to stepwise movement of an actuator means;

said actuator means being capable of assuming a first position and a second position, said movable stop member opening said throttle valve a predetermined amount in said first position;

said actuator means including a vacuum diaphragm actuator and a solenoid actuator, said vacuum actuator being operably connected to a source of vacuum for causing said actuator means to assume said first position in response to a first output signal of a control device, said solenoid actuator being connected to a second output signal of said control device for causing said actuator means to be maintained in said first position;

said first output signal being responsive to a predetermined condition of said engine, said predetermined condition being indicative in part of said idle speed falling below a predetermined minimum speed;

said first output signal being maintained for a predetermined time after said idle speed has fallen below said predetermined minimum speed;

said first output signal being removed after said predetermined time and then being reapplied and maintained if said idle speed falls below said predetermined minimum speed;

said first output signal being disabled when said idle speed rises above a predetermined maximum idle speed.

4,354,467

VEHICLE SPEED CONTROL SYSTEMS

John Noddings, Coventry, and Roland K. Borton, Rugby, both of England, assignors to Associated Engineering Limited, Leamington Spa, England

PCT No. PCT/GB79/00064, § 371 Date Jan. 31, 1980, § 102(e) Date Jan. 30, 1980, PCT Pub. No. WO79/01151, PCT Pub. Date Dec. 27, 1979
PCT Filed Apr. 27, 1979, Ser. No. 189,847
Claims priority, application United Kingdom, May 31, 1978, 25333/78
Int. Cl.[3] G05D 13/62; G06F 15/20; F02D 31/00
U.S. Cl. 123—352 3 Claims

1. A vehicle speed control system, comprising

memory means for storing a road speed reference signal representing a desired road speed for the vehicle,

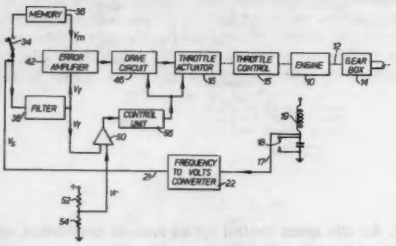
means operative to produce an input signal at least normally representing the actual road speed of the vehicle,

first comparing means operative to compare the road speed

reference signal and the input signal whereby to produce a first control signal dependent on the difference, if any, between the two signals compared,

first control means responsive to the first control signal so as to adjust the engine power in a direction and by an amount tending to hold the actual road speed of the vehicle at the desired road speed value,

means operative to generate an engine speed reference signal representing a desired maximum engine speed which is fixed and independent of the actual road speed of the vehicle,



second comparing means connected to compare the engine speed reference signal with a signal representing the actual speed of the engine and independent of the actual road speed of the vehicle whereby to produce a second control signal when the actual engine speed exceeds the value thereof represented by the engine speed reference signal, and

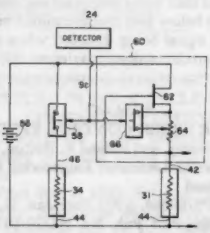
second control means responsive to the second control signal to disable the first control means so as to render the first control means incapable of adjusting the engine power.

4,354,468

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE WITH SUBSYSTEM TO CONTROL CURRENT SUPPLY TO OXYGEN SENSOR

Kohki Sone, Tokyo, and Okamura Kenji, Zushi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 3, 1980, Ser. No. 193,716
Claims priority, application Japan, Oct. 9, 1979, 54-130602
Int. Cl.³ F02D 5/00
U.S. Cl. 123—440 **6 Claims**



1. A system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the control system comprising:

an electrically controllable fuel supplying means provided in the intake system of the engine;

an air/fuel ratio detector which is disposed in an exhaust passage for the engine and has an oxygen-sensitive element of a concentration cell type comprising a substrate, a microscopically porous reference electrode layer formed on the substrate, a microscopically porous layer of an oxygen ion conductive solid electrolyte formed on the substrate so as to cover the reference electrode layer substantially entirely and a microscopically porous measurement electrode layer formed on the solid electrolyte layer and an electric heater;

fuel feed control means for providing a control signal to the fuel supplying means to control the rate of fuel feed to the engine so as to maintain a predetermined air/fuel ratio by utilizing the output of the air/fuel ratio detector as a feedback signal; and

a sub-system to supply a heating current to the heater of the air/fuel ratio detector and force a DC current of a predetermined intensity to flow through the solid electrolyte layer of the oxygen-sensitive element from the reference electrode layer toward the measurement electrode layer to cause migration of oxygen ions through the solid electrolyte layer from the measurement electrode layer toward the reference electrode layer to thereby establish a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer,

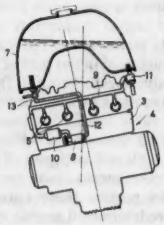
said sub-system comprising operating condition detecting means for producing a command signal while the operation of the fuel feed control means is temporarily discontinued to release the air/fuel ratio from the feedback control and the engine is operated under such a condition as causes a significant lowering of the concentration of oxygen in the exhaust gas, and an electrically controllable switch means for interrupting the supply of said heating current to said heater while the operating condition detecting means produces said command signal, whereby the activity of the solid electrolyte layer in the oxygen-sensitive element decreases while said command signal is produced thereby preventing significant lowering of said reference oxygen partial pressure from a predetermined level by the influence of the lowered oxygen concentration in the exhaust gas.

4,354,469

FUEL INJECTION APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Toshihiko Sato, Oi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,959
Claims priority, application Japan, Jun. 24, 1980, 55/84583
Int. Cl.³ F02M 5/10
U.S. Cl. 123—460 **1 Claim**



1. A fuel injection apparatus for use in a motorized two-wheeled vehicle comprising a vehicle body, front and rear wheels mounted thereon, a side stand mounted on one side thereof, and a multi-cylinder type internal combustion engine mounted on the center portion thereof, said engine including plural cylinders positioned laterally, with respect to said body, plural fuel injection nozzles, a fuel pump, a delivery pipe means for delivering fuel supplied from said fuel pump to said plural nozzles, wherein said plural nozzles are disposed laterally in the direction of said plural cylinders and said delivery pipe means is disposed laterally in the direction of said plural noz-

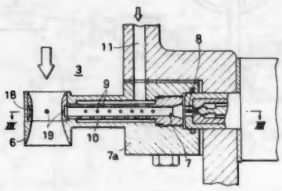
zles, and a fuel pressure regulator coupled to one end portion of said pipe means, said one end portion being on the opposite side of the side of the vehicle body having said side stand.

4,354,470

FUEL SUPPLY APPARATUS IN INTERNAL COMBUSTION ENGINE

Kiyoshi Miyaki, Asaka; Akihiro Yamato, Sayama; Hidenobu Nagase, Wako, and Kazuo Otsuka, Tanashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,369
Claims priority, application Japan, Jul. 6, 1979, 54/85011
Int. Cl.³ F02M *51/02*
U.S. Cl. 123—472 4 Claims



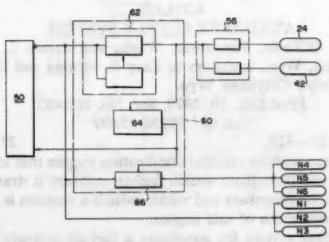
1. A fuel supply apparatus in an internal combustion engine comprising an intake passage having a straight pipe portion with a central axis, a single venturi device positioned and supported in said straight pipe portion along said central axis having a venturi throat therein and at least one fuel discharge opening for discharging into said throat, a mixture producing source communicating with the at least one fuel discharge opening and comprising a hollow bleed tube having two ends and a plurality of bleed holes therethrough positioned circumferentially and axially, one end of the tube opening to the at least one discharge opening, a fuel injection nozzle positioned at the other end of the bleed tube remote from said venturi device, and means surrounding the bleed tube defining an annular space for communicating external air to said plurality of bleed holes whereby a fuel/air mixture produced in said bleed tube by the mixing of fuel supplied under pressure from said injection nozzle with external air passed through the plurality of bleed holes is discharged into said throat of said venturi device through said at least one discharge opening.

4,354,471

INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 14, 1980, Ser. No. 149,860
Claims priority, application Japan, May 15, 1979, 54-59325
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—481 6 Claims



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake passage provided therein with a throttle valve, said intake passage being divided downstream of said throttle valve into first and second branches leading to said first and second cylinder units, respectively;

(c) a load detector adapted to detect the load at which said engine is operating and provide a low load indication signal when the engine load is below a predetermined value;

(d) fuel supply means for supplying a controlled amount of fuel into said first and second cylinder units, said fuel supply means being responsive to the low load indication signal for cutting off the supply of fuel to said second cylinder unit;

(e) valve means provided at the entrance of said second intake passage branch, said valve means being resonsive to the low load indication signal for cutting off the flow of air to said second cylinder unit; and

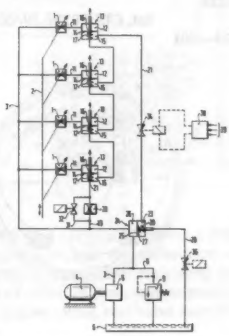
(f) delay means for delaying the start and end of application of the low load indication signal to said fuel supply means.

4,354,472

FUEL INJECTION SYSTEM

Heinrich Knapp, Leonberg, and Wolfgang Maisch, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,867
Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921604
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—493 9 Claims



1. A fuel injection system for mixture-compressing internal combustion engines with externally-supplied ignition, having controlable fuel metering valves disposed in a fuel supply line for controlably metering a fuel quantity to separate cylinders of said engine which is proportional to the air quantity aspirated by the engine, further wherein said fuel metering occurs at a constant pressure difference which is variable in accordance with operational characteristics of said engine, further having a regulating valve provided with movable valve elements disposed downstream of each fuel metering valve, said movable valve elements dividing said regulating valve into a fuel supply chamber which is connected with said metering valve and a fuel control chamber connected with a control pressure line and arranged to control said pressure difference at each fuel metering valve, each said fuel supply chamber of said regulating valve being exposed to fuel pressure downstream of the associated metering valve and said fuel control chamber of said regulating valve being exposed to pressure in a control pressure line connected to said control chamber of each of said regulating valves, said control pressure line being pressure limited on a fuel supply end by a control throttle

connected to said fuel supply line and on a fuel return end by a control pressure valve disposed downstream of said control chamber, said control pressure line communicating via said control throttle with said fuel supply line, an electromagnetic valve connected in said control pressure line operative in response to control signals, characterized in that pressure in said control pressure line can be influenced by operation of said electromagnetic valve, by means of control signals characterizing engine overrunning so that the regulating valves close and fuel injection is interrupted due to fuel pressure resulting from operation of said electromagnetic valve.

4,354,473

INJECTION INSTANT ADJUSTER FOR INTERNAL COMBUSTION ENGINES

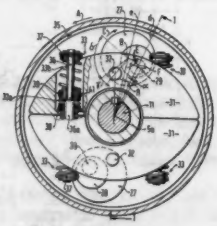
Gerhard Geyer, Munich, and Heinz Kuschmierz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,137

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952219

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—501 **8 Claims**



1. An injection instant adjuster for Diesel internal combustion engines arranged to vary the mutual rotary position of a driven shaft connected with a fuel injection pump relative to a driving shaft in accordance at least with rpm, said adjuster having at least one control element actuatable counter to the force of a restoring means and having at least one adjusting cam rotatable by said control element and connected between a driving member and a driven element of the adjuster, said adjusting cam further being supported in one of said adjuster elements and coupled with the other element via an eccentric adjusting bolt, characterized in that to attain a "late" adjustment (α) preceding the conventional "early" adjustment (β) of the instant of injection, the outset position of means cooperating with said adjusting cam is designed so that the distance between a connecting line (d) from an axial center of said shafts to the center point (F) of said last-named means and a connecting line (e) from said axial center of said shafts to the center point (B) of said adjusting cam is at first increased, when the rotational direction (C) of said adjusting cam remains the same, in the direction of the "late" adjustment (α) of the instant of injection and is subsequently decreased in the direction of "early" adjustment (β).

4,354,474

FUEL INJECTION ADVANCE ANGLE CONTROL APPARATUS

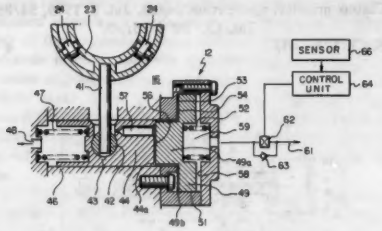
Masayoshi Kobayashi; Toru Sakuranaka; Keiichi Yamada; Masayasu Hayakawa; Sachio Nakagawa; Kohki Iwata, and Ryuichi Komori, all of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1979, Ser. No. 60,094

Claims priority, application Japan, Sep. 28, 1978, 53-118978

Int. Cl.³ F02M *59/32*

U.S. Cl. 123—502 **7 Claims**



1. A fuel injection control apparatus for an engine including a housing having a first bore, a second bore having an end wall, the first bore colinearly communicating with the second bore through said end wall, a diameter of the second bore being larger than a diameter of the first bore, a first piston slidable in the first bore and being connected so that a fuel injection advance angle of the apparatus corresponds to a position of the first piston, a second piston slidable in the second bore, a first spring urging the first piston toward abutment with the second piston, a second spring urging the second piston toward abutment with said end wall, a non-pressurized liquid fuel reservoir, engine driven pump means for pumping fuel from the reservoir at a pressure which increases with engine speed and a first passageway connecting the pump means with a space between adjacent ends of the first and second pistons respectively, characterized by comprising:

a second passageway connecting the reservoir with the second bore such that fuel from the reservoir is constantly urged to flow through the second passageway into the second bore and contact an end of the second piston opposite to said adjacent end;

a valve disposed in the second passageway;

control means for initially closing the valve to apply a liquid lock to the second piston and opening the valve to remove the liquid lock from the second piston after an engine operating parameter reaches a predetermined value; and

a check valve connected across the valve, the check valve allowing flow of fuel therethrough only from the reservoir to the second bore.

4,354,475

AUXILIARY SUPPLY SYSTEM

James P. O'Toole, Vancouver, Wash., and James L. Mylar, Cheyenne, Wyo., assignors to Lazy S. Mining and Development Corp., Cheyenne, Wyo.

Filed Dec. 10, 1979, Ser. No. 101,462

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—525 **27 Claims**

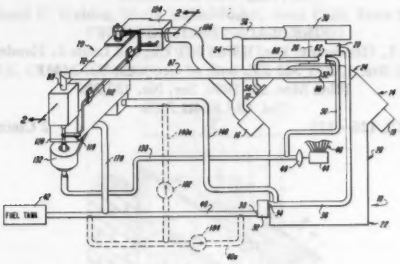
1. For use with an internal combustion engine that includes:

an intake manifold from which fuel-air mixture is drawn into combustion chambers and within which a vacuum is created during operation of said engine;

a carburetion system for supplying a fuel-air mixture to said manifold;

means for selectively varying the quantity of said mixture supplied by said system to said manifold;

means for selectively changing the ratio between fuel and air in said mixture supplied by said system;
and means responsive to load upon and speed of operation of said engine for developing a control signal respresentative thereof;
an auxiliary energy supply system comprising:
a chamber having an inlet and an outlet and an atomizing throat through which a combination of fuel and air may be drawn essentially only from said atomizing throat;
means separate from the atomizing throat and disposed within said chamber for blending said combination of fuel and air;
a conduit coupled at one end to said manifold exclusive of said carburetion system and coupled at its other end essentially only to said outlet;



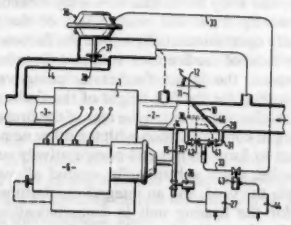
a metering valve effectively disposed in said conduit and responsive to said control signal for controlling the amount of the blended combination drawn from said outlet and through said conduit by said vacuum;
said atomizing throat having a fuel intake port, an air input port and an output port with said output port being coupled to said inlet, the drawing of the blended combination from said outlet in turn drawing air through said input port and into comminglement with liquid fuel delivered through said intake port and atomized by action of said throat;
means for delivering air to said input port;
and means for delivering liquid fuel to said intake port.

4,354,476

APPARATUS FOR CONTROLLING THE RECIRCULATED EXHAUST GAS QUANTITIES AND THE INJECTION QUANTITY IN AUTO-IGNITING INTERNAL COMBUSTION ENGINES

Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 84,701, Oct. 15, 1979, Pat. No. 4,304,209.
This application Oct. 2, 1981, Ser. No. 308,059
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849508
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **7 Claims**



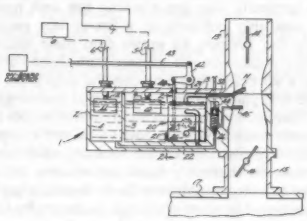
1. An apparatus for controlling an exhaust gas recirculation quantity and a fuel injection quantity in auto-igniting internal combustion engines including an intake manifold, an arbitrarily actuatable throttle valve disposed in said intake manifold, said throttle valve arranged to vary air input pressure prevailing substantially downstream therefrom, a quantity adjustment device of a fuel injection pump which supplies fuel to said engine, a first pneumatic adjustment device operatively connected with said quantity adjustment device for controlling the supply of fuel to said engine, first pressure supply means connected to a first pressure withdrawal point on said intake manifold downstream of said throttle valve between said intake manifold and said first adjustment means to supply pressure to said first adjustment device for controlling fuel supplied to said engine, an exhaust gas recirculation valve, a second pneumatic adjustment device operatively connected to said exhaust gas recirculation valve for controlling said valve, a first connecting line connected to a second withdrawal point on said intake manifold immediately upstream of said throttle valve, a second pressure connecting line connected to a third pressure withdrawal point downstream of said throttle valve said first and second connecting lines connected to a common pressure line, said common line connecting said first and second connecting lines to said second pneumatic adjusting device for controlling said exhaust gas recirculation valve.

4,354,477

MULTI-FUEL CARBURETOR WITH ROTARY MIXING VALVE

Ellis H. Sprick, 2855 Flintlock St., Eugene, Oreg. 97401

Filed May 4, 1981, Ser. No. 260,348
Int. Cl.³ F02M *13/00*
U.S. Cl. 123—575 **8 Claims**



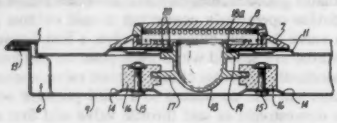
1. In combination with a carburetor having a fuel discharge nozzle for discharging fuel into the carburetor venturi, the improvement comprising a multi-fuel regulating valve assembly for mixing fuels of different Btu's and permitting the varying of a fuel charge octane rating, said valve assembly comprising in combination,
a main valve body defining first and second fuel inlets each inlet adapted for communication with a source of fuel of a different octane rating, said body also defining a fuel mixing chamber downstream from the first and second inlets, outlet means communicating the mixing chamber with the carburetor discharge nozzle,
a valve component rotatably mounted in said main valve body and including a first vane operable to alter the effective size of a first fuel inlet port at the innermost end of said first fuel inlet, a second vane operable to open and subsequently alter the effective size of said second fuel inlet port at the innermost end of the second fuel inlet,
control means coupling the rotatably mounted valve component with an engine speed control, and
said first vane operable to regulate fuel flow through the first fuel inlet during constant speed operation of the engine and an increased fuel flow during acceleration periods of engine operation, said second vane operable to regulate a second fuel flow through the second fuel inlet to the mixing chamber during acceleration periods of engine operation to increase the octane rating of the fuel charge while the increased first mentioned fuel flow provides adequate fuel charge Btu's.

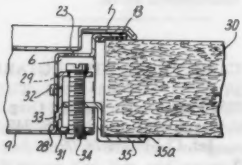
4,354,478

COOKING HOB, PARTICULARLY FOR BUILT-IN ASSEMBLY

Giorgio Contini, Guastalla, Italy, assignor to Societa per Azioni Technogas Fabbrica Apparecchiature Termo-Electrodomestiche di Giorgio e Gianni F. lit Contini, Gualtieri, Italy

Filed Jan. 14, 1980, Ser. No. 111,803
Claims priority, application Italy, Feb. 2, 1979, 46815 A/79
Int. Cl.³ F24C 3/00
U.S. Cl. 126—39 E 8 Claims





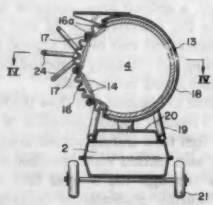
1. A vertically thin gas cooking top unit particularly for built-in assembly comprising, a lower box casing having a generally flat bottom, an upper drip plate spaced from the bottom by a distance not greater than three centimeters and defining a verticle space between the drip plate and the bottom, said drip plate having a plurality of spaced apart openings formed therein, a plurality of rigid burner bodies in said space, each burner body having an outlet adjacent a respective opening of the drip plate, means for securing each burner body to said bottom in thermally insulated relation to said bottom, means for securing each burner body to said drip plate adjacent the respective drip plate openings, in thermally insulated relation to the drip plate so that each burner body comprises a rigid connecting bridge between and secured to said bottom and said drip plate and which is thermally insulated from both the drip plate and the bottom, conduits within said space for feeding gas to said burner bodies, and a plurality of gas rings on said drip plate and communicating respectively with the outlets of the respective burner bodies.

4,354,479

INFRARED RAY GENERATOR

Tadao Haruhara, Suzaka, Japan, assignor to Orion Machinery Co., Ltd., Japan

Filed Feb. 19, 1981, Ser. No. 236,013
Claims priority, application Japan, Feb. 19, 1980, 55-20080[U]
Int. Cl.³ F24C 3/04
U.S. Cl. 126—92 AC 7 Claims



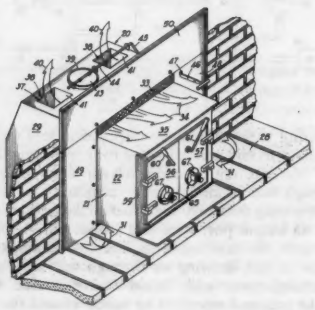
1. An infrared ray generator comprising a housing of heat resisting refractory material, said housing having a first opening which faces in a desired heating direction, a number of heat resistant inorganic non-metallic mineral fiber mesh screens arranged one over the other to cover said first opening and to form a combustion chamber together with said housing, said mesh screens having a surface which faces in the heating direction, burner means extending through a second opening in said housing for directing a combustion flame into said combustion chamber so that said mesh screens are brought to red heat by the combustion flame and said mesh screens serve to burn flammable substances which originate from the combustion flame and contact said mesh screens, and screen support means fixed to said housing and in contact with said surface of said mesh screens which surface faces in the heating direction for supporting said mesh screens.

4,354,480

FIREPLACE HEATING UNIT

Louis L. Henderson, Rte. 1, Box 362 YY, and Louis L. Henderson, Rte. 1, Box 362 ZZ, both of Grottoes, Va. 24441

Filed Mar. 20, 1980, Ser. No. 132,295
Int. Cl.³ F24B 7/00
U.S. Cl. 126—123 2 Claims



1. A self-contained fireplace heating unit for placement in a fireplace void in communication with a chimney passage and adapted to deliver heated air into a living space in a convective process without forced draft means, said heating unit comprising a refractory lined firebox substantially filling the fireplace void and including a frontal portion projecting well forwardly of the void and into the living space to form a radiator means, frontal access door means on the forwardly projecting portion of the firebox and being vented, a jacket for the reception of living space air and the return of such air to the living space around the firebox portion within the fireplace void and including bottom frontally open section below the floor of the firebox and substantially across the same, a rear upright section at the back of the firebox extending from the floor to a level above the top of the firebox and substantially across the firebox transversely, and a top horizontal forwardly extending section leading forwardly from said rear section of the jacket and being frontally open substantially across the firebox and terminating at the front of the fireplace void to deliver heated air to the living space, the jacket further including vertical side sections extending for the full height of the firebox and from the front of the fireplace void to the rear of the firebox, the side sections being in communication with the other named sections of said jacket to form an integral comparatively narrow heat exchange jacket space substantially around all walls of the firebox within the void, and an integral combustion gas manifold maze for the heating unit in communication with the firebox and fireplace chimney passage and completely isolated from said jacket space, said manifold maze comprising a main large vertical entrance opening for rising combustion gases at the rear and top and lateral center of the firebox, a communicating main forward horizontal passage for combustion gases at the top of the main vertical passage and extending forwardly

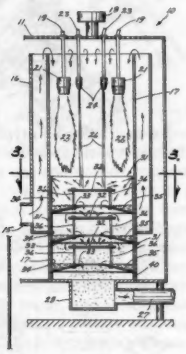
beyond the fireplace void to the front of said projecting portion of the firebox, two reverse horizontal side exit passages for combustion gases on opposite sides of the main passages and extending to the rear of the firebox and being constantly in communication with the chimney passage, an adjustable damper valve in said main large vertical entrance opening for rising combustion gases to selectively place such entrance opening in a desired degree of communication with the chimney passage or to block direct communication of such entrance opening with the chimney passage, and remote means to operate said damper valve from said living space.

4,354,481

HEATING APPARATUS

David P. Welden, North Indiana Ave., Iowa Falls, Iowa 50126

Filed Sep. 2, 1980, Ser. No. 182,853
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—350 B **7 Claims**



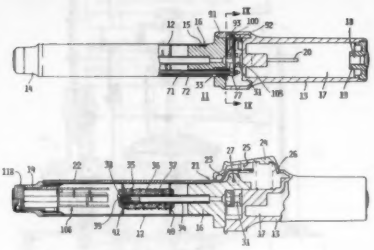
1. Heating apparatus comprising:
chamber means for forming a chamber, said chamber means being generally cylindrically shaped;
air inlet means attached to said chamber means;
air outlet means attached to a bottom portion of said chamber means;
heater means attached to said chamber means for introducing heat into said chamber;
blower means for causing air to enter said inlet means, pass through said chamber, and exit through said outlet means;
means for introducing water into said chamber from a top portion thereof; and
water catching means disposed below said water inlet means for holding said water in pools in said chamber and preventing all of said water from passing directly out of said outlet means, said water catching means comprising:
a horizontally and axially centrally disposed plate means located below said water introducing means for preventing water from said water introducing means to pass directly to said outlet means;
annular means sealingly and operably attached to the inner wall of said chamber means and extending upwardly and radially inwardly with respect to the axis of the cylindrical chamber means to a point directly below said plate means, a central portion of said annular means having an opening therein for allowing air and water to pass therethrough; and
means for attaching the plate means to the annular means for holding the plate means above said annular means and for allowing air and water to pass between the plate means and the annular means and through said opening in the annular means.

4,354,482

AUTOMATIC TEMPERATURE CONTROL SYSTEM WITH MANUAL OFF OVERRIDE FOR A CATALYTICALLY HEATED CURLING DEVICE

Mark B. Beisecker, Brookline, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 22, 1980, Ser. No. 167,632
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 7934175[U]; Dec. 25, 1979, 2948857
Int. Cl.³ A45D *1/04*; F23Q *2/08*
U.S. Cl. 126—409 **4 Claims**



1. A curling device having a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between the first and second ends and surrounding the heating chamber, heating means including a catalyst means disposed in the heating chamber, a housing mounted proximate the tubular body including fuel supply means for storing a fuel in a liquid state, and aspirating means coupled between the fuel supply means and the heating chamber for vaporizing the fuel and for mixing the vaporized fuel with air and for supplying a vaporized fuel/air mixture to the catalyst means, wherein the improvement comprises:
a control plate having first and second ends and adapted to control the axial movement of a valve stem and thereby control the flow of vaporized fuel;
pivot means for said control plate positioned between said first end of said control plate and the valve stem;
temperature control means for automatically regulating the flow of vaporized fuel in response to the temperature of said heating chamber including a bi-metal thermostat element positioned coextensive to the tubular body comprising a tube and a rod located within the tube, said tube and rod being firmly attached at a first end, said tube and rod having different co-efficients of thermal expansion so that said rod moves longitudinally relative to said tube in response to variations and temperature of said tube, said second end of said rod being coupled to said first end of said control plate through an aperture defined in said first end of said control plate, said second end of said rod including a stop means to allow unidirectional control of said first end of said control plate; and
mechanical on/off selector means including a first spring means urging said control plate to pivot in a first rotational direction about said pivot means, and also including a second spring means, said manual on/off selector means also including a manual selector having an on and off position, a portion of said second spring means being movable in response to the movement of said manual selector wherein the positioning of said manual selector in the off position causes said second spring means to overcome said first spring means thereby urging said control plate about said pivot means in a second rotational direction opposite said first rotational direction thereby urging the axial displacement of the valve stem in a downward direction regardless of the thermal state of said bi-metal thermostat element.

4,354,483

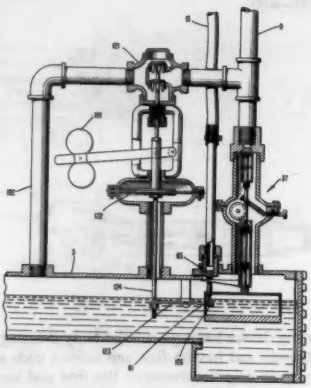
CLOSED LOOP SOLAR COLLECTOR SYSTEM WITH DUAL RESERVOIRS AND FLUID BYPASS

Barry W. Johnston, 1622 Que St., NW., Washington, D.C. 20009

Continuation-in-part of Ser. No. 43,799, May 30, 1979, Pat. No. 4,286,579. This application May 5, 1980, Ser. No. 146,424

Int. Cl.³ F24J 3/02

U.S. Cl. 126—419 2 Claims



1. A closed loop solar collecting system, comprising:

a fluid receiver for collecting solar heat;

fluid supply means, connected to said fluid receiver, for supplying a quantity of vaporizable heat transfer fluid to said fluid receiver;

means attached to said receiver for precisely metering a quantity of heat transfer fluid from said supply means;

valve means connected to said fluid supply means and to said fluid receiver for bypassing said metering means and supplying said fluid receiver with heat transfer fluid from said fluid supply means when the pressure inside said fluid receiver reaches a predetermined level;

heat exchanger means connected to said fluid receiver for absorbing heat energy from the heat transfer fluid which is vaporized in said receiver, the vaporized heat transfer fluid condensing after releasing its latent heat of vaporization to said heat exchanger, the condensed fluid flowing under pressure provided by the vaporized fluid entering said heat exchanger means to said supply means.

4,354,484

SOLAR COLLECTION SYSTEM

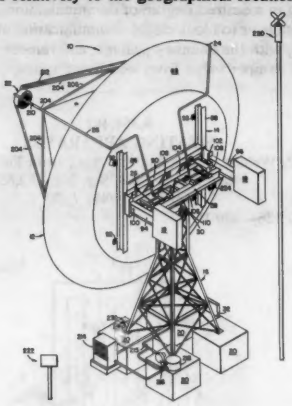
Kenneth B. Malone, and Joseph A. Grow, Jr., both of Chattanooga, Tenn., assignors to Transolar, Inc., Hixson, Tenn.

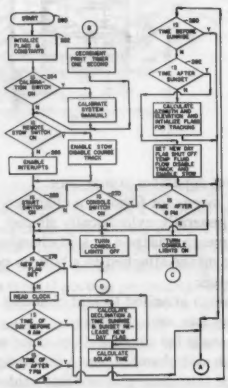
Filed Jan. 5, 1981, Ser. No. 222,316

Int. Cl.³ F24J 3/02

U.S. Cl. 126—425 4 Claims

1. A solar energy collection system for receiving and collecting a concentrated supply of available energy from the sun, said system comprising a substantially dish-shaped reflector having a frontal reflective surface for receiving rays of solar energy and convergingly reflecting the rays toward a focal point, an absorber disposed substantially at said focal point for absorbing the rays, a fixed support tower, mounting means for journally mounting said reflector on said tower for rotation about a substantially vertical axis relatively to said tower, means carried by said tower for journally mounting said reflector for pivotable movement about a substantially horizontal axis relatively to said tower, azimuth drive means responsive to an azimuth control signal for rotating said reflector about said vertical axis, altitude drive means responsive to an elevational control signal for pivoting said reflector about said horizontal axis, position responsive means on each of the azimuth and elevational drive means for generating azimuth and elevational position signals corresponding to the disposition of said reflector, solar insolation monitoring means for providing an enabling signal when available insolation is above a predetermined threshold amount, controller means having stored memory data including the azimuth and elevational position of the sun at all times relatively to the geographical location of the





reflector for receiving the azimuth and elevational position signals and the enabling signal and for comparing the azimuth and elevational disposition of the reflector with the stored position and for generating said azimuth and elevational control signals, and means for selectively transmitting said control signals to said azimuth and elevational drive means to point said reflector at the sun.

4,354,485

THERAPEUTIC APPARATUS FOR USE IN TREATMENT OF MUSCULAR AND SKELETAL DISORDERS

Gary J. Safadago, 5705 Seaview Ave. NW., Seattle, Wash. 98107

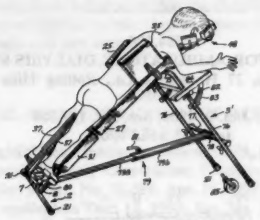
Division of Ser. No. 711,469, Aug. 4, 1976, Pat. No. 4,207,879. This application Mar. 17, 1980, Ser. No. 130,592

Int. Cl.³ A61F 5/00

U.S. Cl. 128—70 2 Claims

1. In therapeutic apparatus for use in treatment of muscular and skeletal disorders including an elongated frame having a foot end portion and head end portion, frame-supporting means for supporting the frame on a substantially level surface

with the frame inclined upwardly toward the frame head end portion at an angle of inclination to such substantially level surface and body-supporting means carried by the frame and having a head end portion, for supporting a body in downwardly-facing position with the head beyond the head end portion of the body-supporting means, the improvement comprising the frame-supporting means including a freestanding supporting member projecting outwardly from the frame side opposite the body-supporting means and inclined away from the frame foot end portion, one end portion of said supporting member being pivotally mounted to the frame head end portion, means for maintaining the frame and said supporting



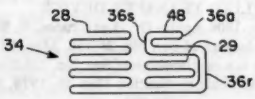
member selectively in different angular relationships to each other including telescoping brace means adjustable in effective length and having one end portion connected to said supporting member at a location spaced from its pivoted end and its opposite end portion connected to the frame foot end portion for maintaining the frame in different angles of inclination to such substantially level surface corresponding to the adjusted length of said telescoping brace means, and a tray carried by the supporting member and projecting therefrom in a direction lengthwise of the frame away from the foot end portion thereof, said tray having a portion projecting beyond the head end portion of the body-supporting means.

4,354,486

OVERHEAD TABLE DRAPE

Don W. Oliver, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Sep. 29, 1980, Ser. No. 192,136
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 D **14 Claims**



1. A folded, overhead table drape having an upper side and a lower side for contacting a table comprising:

(a) a first stack of panels folded around parallel fold lines having an uppermost panel, a lowermost panel, and two side edges parallel to said fold lines;

(b) a second stack of panels folded around parallel fold lines having an uppermost panel, a lowermost panel, and two side edges parallel to said fold lines; and

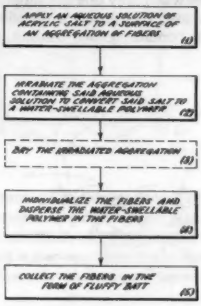
(c) a length of material integrally connected to a connecting panel of each of said first and second stacks, said length of material extending from said connecting panel of said first stack underneath said second stack to said connecting panel of said second stack, said length of material being folded such that it comprises a segment having adjacent surfaces, said segment of folded length of material being positioned such that it extends alongside at least a portion of one of said side edges of said second stack and atop the uppermost panel of at least said second stack.

4,354,487

FIBER/ABSORBENT POLYMER COMPOSITES AND METHOD OF FORMING SAME

Boguslaw Oczkowski, Spotswood, and Norman Schiff, Kendall Park, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed May 12, 1980, Ser. No. 149,219
Int. Cl.³ C08F *2/54*; A61F *13/18*
U.S. Cl. 128—156 **17 Claims**


APPLY AN AQUEOUS SOLUTION OF ACRYLIC SALT TO A SURFACE OF AN AGGREGATION OF FIBERS (a)
IRRADIATE THE AGGREGATION CONTAINING SAID AQUEOUS SOLUTION TO CONVERT SAID SALT TO A WATER-SWELLABLE POLYMER (b)
DRY THE IRRADIATED AGGREGATION (c)
INDIVIDUALIZE THE FIBERS AND DISPERSE THE WATER-SWELLABLE POLYMER IN THE FIBERS (d)
COLLECT THE FIBERS IN THE FORM OF FLUFFY BATT (e)

1. Process for producing absorbent, fluffy batts of fibers, which comprises the steps of:

(a) applying an aqueous solution comprising a salt of acrylic or methacrylic acid to a surface of an aggregation of fibers, the amount of said solution being sufficient to penetrate said aggregation to a predetermined depth so as contact some but not all of the fibers in said aggregation, said amount being sufficient to provide not more than about 50 weight percent salt, based on weight of fibers;

(b) irradiating said aggregation containing aqueous solution with electromagnetic or corpuscular ionizing radiation to convert said salt of acrylic or methacrylic acid to a water-swellable polymer;

(c) individualizing the fibers to disperse the water-swellable polymer in the fibers; and

(d) collecting the individualized fibers and water-swellable polymer in the form of a fluffy batt of fibers having distributed therethrough isolated portions of water-swellable polymer affixed to individual fibers or to small groups of fibers.

17. The product produced by the process of claim 1.

4,354,488

NOSE MASK GAS DELIVERY DEVICE

Donald M. Bartos, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 24, 1980, Ser. No. 209,784
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.25 **17 Claims**

15. A nose mask for administering at least one type of gas to a human being, which comprises, in combination:

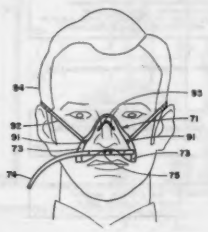
(I) a shell having a rear portion, a front portion, and a first opening, said shell having a shape such that:

(a) the rear portion has edges which substantially conform to the face of a wearer,

(b) the front portion is adapted to extend over the nose of the wearer from the bridge of the nose down to a point just above the upper lip of the wearer thereby enabling the wearer to breathe, eat and converse in a substantially normal fashion, and

(c) the first opening consists of the entire horizontal area situated beneath the wearer's nose extending from the front portion to the rear portion of the shell along a line parallel to said point above the upper lip of the wearer and perpendicular to the face of the wearer; and

(II) a length of hollow gas delivery tube contained within an inside region of the shell which region is defined as being the area between both sides of the front portion of the shell and the area between the lower edge of the wearer's nose and said point above the wearer's upper lip, the gas delivery tube extending from one side of the shell to the other in a straight line beneath the nose of the wearer, being affixed to the shell by a suitable attachment means and being adapted to receive at least one gas supply tube, any remaining end of said tube being sealed by a suitable sealing means when only one gas supply tube is employed to provide a source of gas to said delivery tube, said gas delivery tube containing two distinct gas delivering and



dispersing means which are two rows of six round gas delivery openings separated by a 90° angle wherein the openings pass through one wall of said gas delivery tube and wherein adjacent openings are equally spaced from each other across the length of said tube and are situated such that the center of each row is located on a line which corresponds to the center of the wearer's nose, one row being positioned such that the gas being delivered is directed up to the wearer's nose and the other row being positioned such that the gas being delivered is directed at the front portion of the shell, at least one of said rows extending longitudinally over the surface of the gas delivery tube for a distance which is greater than the internal diameter of said hollow delivery tube.

4,354,489

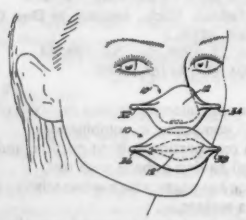
INDIVIDUAL NOSE AND MOUTH FILTERS

Florence Risboy, 4819 Sorrento Ct., Cape Coral, Fla. 33904

Continuation-in-part of Ser. No. 30,520, Apr. 16, 1979, Pat. No. 4,240,420. This application Oct. 20, 1980, Ser. No. 198,767

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—206.14 **1 Claim**



1. An oronasal filter mask comprising two identical filter mask elements for use in pairs wherein one of said filter elements of the pair is adapted to cover the nostrils of a user and the other of said filter element is adapted to cover the mouth areas of a user, each filter mask element of said pair including a suitable centrally disposed flexible filter material the perimeter of which defines an outwardly extending peripheral flange and being generally ovoid in shape with rounded ends and wherein the dimension of the overall length is approximately twice the dimension of the overall width of each filter mask element, each filter mask element being sized and configurated to cover the mouth area of the user and thereby, also being sufficiently sized and configurated to cover the nostril area of the user, and a continuous band of a pressure sensitive adhesive material applied around said outwardly extending peripheral flange and outside of the centrally disposed flexible filter material for secure engagement with a predetermined facial skin area of the user, the pressure sensitive adhesive area of one of the filter mask elements overlying and being bonded to the pressure sensitive adhesive area of the other filter element in the area between the nostrils and mouth when said filter mask elements are applied to both the nostril and mouth areas.

4,354,490

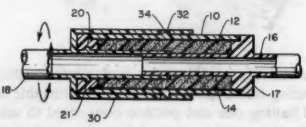
CONNECTOR FOR AMBULATORY DIALYSIS SYSTEM

Phillip P. Rogers, 27 Horseshoe La., Rolling Hills Estates, Calif. 90274

Filed Jun. 9, 1980, Ser. No. 157,268

Int. Cl.³ A61J *7/00*

U.S. Cl. 128—213 A **10 Claims**



1. A peritoneal dialysis fluid connecting device comprising;
cylinder means;
an absorbent packing material substantially filling said cylinder means;
said absorbent packing material being saturated with a disinfectant solution;
a first tube connecting end for supplying peritoneal dialysis fluid;
a second tube connecting end adapted to telescopically mate with said first tube connecting end;
means for passing said first and second tube connecting ends through opposite ends of said cylinder so that said connecting ends are bathed in disinfectant solution when connection is being made and throughout use.

4,354,491

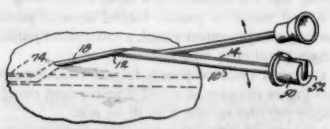
FLUID TRANSFER DEVICE

Steven L. Marbry, 1806 Apollo Dr., Las Cruces, N. Mex. 88001

Continuation-in-part of Ser. No. 20,956, Mar. 18, 1979, abandoned, which is a continuation of Ser. No. 778,024, Mar. 15, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 106,512

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214.4 **7 Claims**



1. A device for supporting a fluid transfer tube, the device comprising:
an elongated hollow needle having a first end shaped to form a cutting edge for making an incision into tissue and a second end opposite said first end;
a slot along the length of said needle at a position in the wall thereof removed from the position of the forward extremity of the cutting edge; and

adapter means attached to said needle for gripping and moving said needle during insertion and removal, said adapter means being generally cylindrical and defining a passage extending longitudinally from one end of said cylinder to the other, said passage having a U-shaped cross section and being aligned with the hollow portion of said needle, said needle being attached to the walls defining said passage, the smallest width of said passage being no smaller than the inner diameter of said needle, said adapter means being sufficiently non-rigid to deform upon manual squeezing of the portion of said adapter means adjacent the curved bottom portion of said U-shaped cross-section to hold a catheter passing through said passage;

the arrangement being such that the fluid transfer tube positioned within the needle may be removed from the needle through said slot therein.

4,354,492

MEDICAL ADMINISTRATION SET WITH BACKFLOW CHECK VALVE

Charles J. McPhee, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 30,398, Apr. 16, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,949

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 E **14 Claims**

1. A medical administration set with a check valve, wherein the improvement comprises: a valve housing having a valve seat; a compliant sheet-like valve member being free of mechanical bias against the valve seat and movably confined in a compartment of the housing without a physical anchoring to the housing; and a plurality of spaced supports connected to the housing which maintain a sealing surface of the valve member at a distance of 0.002 to 0.030 inch from the valve seat when the valve is open; said valve member having sufficient width to cause a pressure differential in either direction across the valve member as low as 2 inches of water to alternately open and close the valve by means of gravity liquid draining at liquid flow rates commonly used in medical administration sets.

4,354,493

THORACIC DRAINAGE UNIT

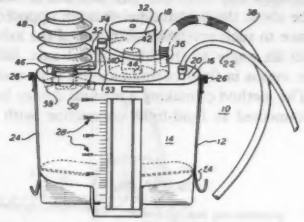
John P. Kayser, and John R. Pinkert, both of Madison, Wis., assignors to Airco, Inc., Montvale, N.J.

Filed Oct. 27, 1980, Ser. No. 200,659

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **5 Claims**

1. A thoracic drainage device having a collection chamber for receiving fluids from a body cavity to be drained, said drainage device comprising a water trap chamber for receiving the fluids, said water trap chamber further containing a predetermined quantity of liquid, inlet means to said water trap chamber and with means to communicate with the body cavity to be drained, said inlet means disposed within said water trap chamber at a point below the level of said initial quantiity of liquid, outlet means from said water trap chamber to carry liquid from said water trap chamber to said collection chamber as said liquid reaches a predetermined level in said water trap chamber, receptacle means carried by said drainage device and means to receive a container containing the initial quantity of



liquid, channel means providing a flow path for the liquid received in said receptacle means to said water trap chamber and baffle means in said channel means intermediate said receptacle means and said water trap chamber to prevent any return flow of the liquid from the water trap chamber to said receptacle.

4,354,494

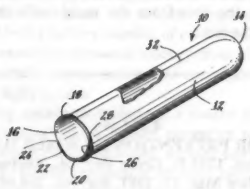
CONDOM HAVING A RETENTION STRAP

Philip E. Hogin, Mooreland Rd., Greenwich, Conn. 06830

Filed Mar. 9, 1981, Ser. No. 242,036

Int. Cl.³ A61F *5/42*

U.S. Cl. 128—294 **6 Claims**



1. A condom comprising:

an elongate thin tubular sheath of resilient material being closed at one end and having an opening at the other end, said opening including a periphery; and

a resilient retention strap having one end portion attached to said periphery at one point and having another end portion attached to said periphery at another point spaced from said one point, said periphery including a beaded edge, said end portions being formed integrally with said edge, said beaded edge comprising an upper part and a lower part each having a cross-sectional area and wherein said resilient strap has a cross-sectional area, said cross-sectional area of said upper part being approximately equal to the combined cross-section areas of said lower part and said strap.

4,354,495

METHOD OF CONNECTING PLASTIC TUBE TO A PLASTIC PART

Raymond O. Bodicky, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Oct. 30, 1980, Ser. No. 201,890

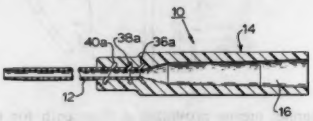
Int. Cl.³ A61M *25/00*; B29C *17/02*

U.S. Cl. 128—348 **24 Claims**

1. An indwelling catheter comprising a plastic tube having at least one generally annular bulge with an axis at an angle to the longitudinal axis of said tube formed by heating an annular area

around an end portion of the tube but spaced from both ends of the tube to form a generally annular bulge with an axis at an angle to the longitudinal axis, and while the bulge is heat-softened moving inner facing walls of the bulge together, and a plastic hub having one end portion molded about said end portion of said tube including the bulge with the inner facing walls thereof together whereby any forces tending to rotate the tube about the longitudinal axis are opposed by increased resistance to such rotation as a result of the axis of said bulge being at an angle to the longitudinal axis, said hub having passage means in fluid communication with said tube.

17. The method of making a medical device having a plastic tube connected in fluid-tight connection with a plastic hub



comprising the steps of providing a plastic tube of predetermined length which when heated sufficiently in selected areas from the exterior side of the tube expands radially outwardly in that area to form a bulge, heating predetermined areas of a proximal end portion of the plastic tube sufficiently from the exterior side thereof to form a radially outwardly extending generally annular bulge thereon with the axis of the bulge at an angle to the longitudinal axis of the tube, cooling the tube sufficiently to harden the bulge, inserting the end portion of the plastic tube including the bulge into a hub mold, filling the mold with a plastic material to mold a hub with the plastic material about the bulge, cooling the plastic material of the hub and removing the hub from the mold with the tube bulge embedded in the hub.

4,354,496

HOOD FOR PREVENTION OF SCALP HAIR LOSS

Esther Andersen, 1735 N. Green Bay Rd., Racine, Wis. 53405

Filed Mar. 17, 1981, Ser. No. 244,681

Int. Cl.³ A61F 7/00

U.S. Cl. 128—403 **5 Claims**

1. A hypothermic tourniquet hood to prevent scalp hair loss comprising,

an exterior flexible elongated casing open at the top and bottom, the bottom adapted to be placed on the head of a user,

an interior flexible elongated casing within said exterior casing, said interior casing being closed at its top end and joined to said exterior casing at its bottom to form a space between said casings which can be filled with ice, and

a drawstring around the bottom of the joined casings, the diameter and position of said drawstring being such that it can be drawn tight to apply pressure as a tourniquet to a patient's hairline.

4,354,497

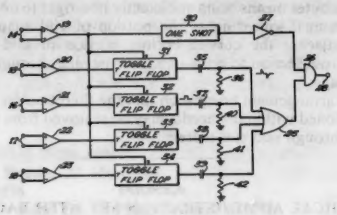
CARDIAC DEPOLARIZATION DETECTION APPARATUS

Alan R. Kahn, Golden Valley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 23, 1977, Ser. No. 799,258

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 D **7 Claims**



1. Cardiac ectopic heat detection apparatus which comprises:

means for sensing cardiac depolarization including first means for sensing depolarization of a first area of cardiac tissue and second means for sensing depolarization of at least one other area of cardiac tissue, said first area being an area of earlier activation within the ventricular conduction system than any of said other areas;

output means; and

means interconnecting said output means and sensing means for providing a signal to said output means only following the occurrence of cardiac depolarization sensed by said second means and not preceded by a depolarization sensed by said first means.

4,354,498

ELECTROMEDICAL APPARATUS

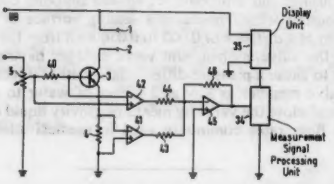
Kurt Weigert, Nuremberg, Fed. Rep. of Germany, and Karl Hudek, deceased, late of Erlangen, Fed. Rep. of Germany (by Amanda Hudek, Kurt Hudek, Gerd Hudek, heirs), assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,466

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939234

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 R **4 Claims**



1. Electromedical apparatus, in particular, a current stimulation apparatus, comprising an output stage as current waveform generator for controlling an output current through a patient's body as the load resistance, said generator having an operating voltage circuit (U_B) for supplying the output current, defined resistance means (4, 40), measurement means (34, 35, 41 through 46) coupled with the defined resistance means (4, 40) for sensing the voltage drops thereacross for the purpose of determination of the patient current and including a display unit (35) for displaying a measure of patient current, characterized in that said measurement means comprises computational means (45) responsive to voltages across said defined resistance means (4, 40) which are at relatively low po-

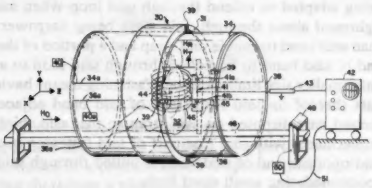
tentials relative to ground potential, and together provide a measure of patient current, said computational means supplying a resultant voltage which can be transmitted to the display unit (35) as a measure of patient current, the output stage for the purpose of constant-current control comprising a transistor (3) whose emitter path is connected to ground potential, and whose base is activated by an adjustable control voltage, said defined resistance means comprising a defined resistance (4) in said emitter path and a defined series resistance (40) connected in series with said base for transmitting the control voltage thereto, characterized in that measuring voltages across the resistance (4) of the emitter path, as well as across the defined series resistance (40), connected in series with the base, are supplied to said computational means (45).

4,354,499

APPARATUS AND METHOD FOR NUCLEAR MAGNETIC RESONANCE SCANNING AND MAPPING

Raymond V. Damadian, 64 Shorthill Rd., Forest Hills, N.Y. 11375

Filed Nov. 20, 1978, Ser. No. 961,858
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—653 **15 Claims**



1. A method of detecting selected nuclei within a specimen utilizing nuclear magnetic resonance pheonomenon comprising:

(a) providing a nonuniform primary static magnetic field space;

(b) focusing the primary static magnetic field space by a time-independent shaping of the primary static magnetic field space to provide a three dimensional resonance domain of selectable size wherein the field strength is substantially uniform;

(c) positioning the specimen such that the resonance domain impinges on the specimen;

(d) directing oscillating magnetic radiation to the resonance domain such that the magnetic field orientation of the oscillating magnetic radiation is orthogonal to the magnetic field orientation of the primary static magnetic field to cause a nuclear magnetic resonance signal to be generated by selected nuclei within the resonance domain;

(e) receiving the nuclear magnetic resonance signal generated; and

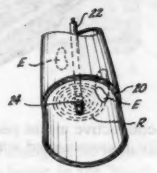
(f) processing the nuclear magnetic resonance signal to determine a nuclear magnetic resonance value directly which nuclear magnetic resonance valve represents the selected nuclei extant in the resonance domain impringing on the specimen.

4,354,500

SYSTEM USING ULTRASONIC ENERGY FOR DETECTION AND QUANTIFICATION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.

Division of Ser. No. 070,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,457
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **22 Claims**



1. A system for detecting air emboli in the blood flow in intracorporeal blood vessels, said system comprising:

(a) a catheter;

(b) an ultrasonic transducer carried by said catheter, said ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer and that is oriented transversely with respect to the longitudinal axis of said catheter, said ultrasonic transducer being capable of transmitting ultrasonic energy throughout said substantially planar region when energized by a high frequency electrical signal, and being further capable of converting any returns of said transmitted ultrasonic energy from objects within said substantially planar region into corresponding electrical return signals; and,

(c) a detecting apparatus including: a source of a high frequency electrical signal, means operative to apply said high frequency electrical signal to said ultrasonic transducer; and, means responsive to said electrical return signals from said ultrasonic transducer to develop a signal representative of air emboli.

4,354,501

ESOPHAGEAL CATHETER INCLUDING ULTRASONIC TRANSDUCER FOR USE IN DETECTION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.

Division of Ser. No. 70,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,458
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **12 Claims**

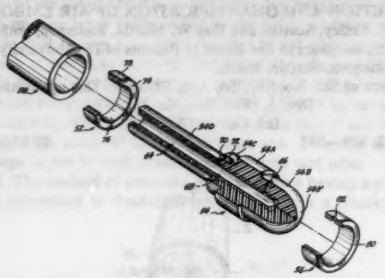
1. An esophageal catheter particularly adapted for use in the detection of air emboli in intracorporeal blood vessels, said catheter comprising:

(a) a substantially cylindrical member;

(b) an ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material carried by said substantially cylindrical member, said ultrasonic transducer providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer;

(c) an elongated cylindrical tube of flexible material receiving said substantially cylindrical member so that said

substantially planar region is oriented transversely with respect to the longitudinal axis of said tube; and,



(d) electrically-conductive means passing through said tube and electrically interconnected with said ultrasonic transducer.

4,354,502

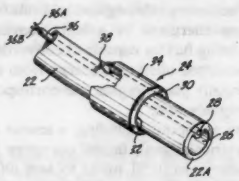
INTRAVASCULAR CATHETER INCLUDING UNTRASONIC TRANSDUCER FOR USE IN DETECTION AND ASPIRATION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Division of Ser. No. 70,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,459

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—663 **10 Claims**



1. An intravascular catheter particularly adapted for use in the detection and aspiration of air emboli in intracorporeal blood vessels, said catheter comprising:

(a) an elongated cylindrical tube of flexible material, said tube having a tip and having formed therein an axial aspiration lumen extending to and being open at said tip;

(b) an ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material carried by said tube adjacent said tip, said ultrasonic transducer when so carried providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer and that is oriented transversely with respect to the longitudinal axis of said tube; and,

(c) electrically-conductive means located in and extending along said tube, said electrically-conductive means being electrically connected with said ultrasonic transducer.

4,354,503

BLOOD PRESSURE CUFF

Richard I. Golden, 1736 Highland, Wilmette, Ill. 60091

Filed Dec. 23, 1980, Ser. No. 219,565

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—686 **10 Claims**

1. A blood pressure cuff adapted to be positioned on a limb of a body, comprising: an elongated flexible band having first and second ends, said band having a front face intended for placing in contact with the limb and having a back face, said band having a compartment therein; bladder means confined within said compartment and adapted to be inflated; fastening means having a first part disposed on said back face at one of said ends; said fastening means having a second part disposed on said front face at the other one of said ends; an elongated separate strip of material extending transversely across said band near said first part at said one of said ends to define, with an adjacent portion of said band, a loop for receiving the opposite end of said band so that said band can be tightened about the limb by pulling on both of said ends of said band and said first and said second fastening means parts interconnected for securing releasably the cuff in position on the limb; means attaching said strip to the said one end of said band for enabling

said loop to be sufficiently large to receive said opposite end of said band without causing it to buckle; and an elongated flexible strap extending from the opposite end of said band and being adapted to extend through said loop when said band is tightened about the limb, said strap being narrower in width than said band to enable said strap and a portion of the opposite end of said band to be pulled through said loop to accommodate smaller size limbs; and said fastening means having a third part thereof on said front face of said band adjacent to the second part disposed on said strap so that said third part can interconnect with said first part of said fastening means when said opposite end of said band is pulled through said loop for accommodating small sized limbs.

4,354,504

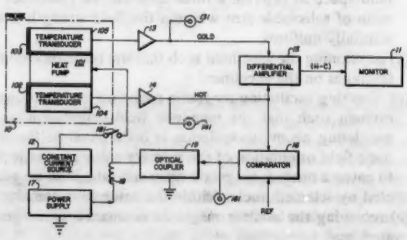
THERMAL DIFFUSION FLOW PROBE

William J. Bro, 3735 W. Cavalier Dr., Phoenix, Ariz. 85019

Filed Sep. 4, 1979, Ser. No. 72,148

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—691 **25 Claims**



1. In a thermodiffusion blood-flow probe system comprising a thermodiffusion probe having a hot and a cold body-tissue-contact plate wherein the temperature gradient between said plates is independent of ambient body-tissue temperature but

varies with blood flow through said body tissues the improvement comprising:

(a) first signal means coupled to said hot contact plate for outputting a signal proportional to the temperature of said hot plate;

(b) second signal means coupled to said cold contact plate for outputting a signal proportional to the temperature of said cold plate;

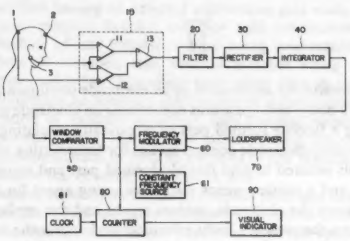
(c) reference signal means for outputting a signal proportional to a selected safe temperature to which body tissue may be exposed without damage while said probe is used to determine blood flow; and

(d) comparison means for comparing the relative level of the output of said reference signal means and the output of said first signal means.

4,354,505
METHOD OF AND APPARATUS FOR TESTING AND INDICATING RELAXATION STATE OF A HUMAN SUBJECT

Kazumasa Shiga, Kawasaki, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sep. 3, 1980, Ser. No. 183,750
Claims priority, application Japan, Sep. 4, 1979, 54-113744
Int. Cl.³ A61B 5/04
U.S. Cl. 128—732 **20 Claims**



1. A biofeedback system comprising:

sensing means attached to the scalp of a person for sensing brain waves of a predetermined frequency band and generating therefrom a physiological signal representative of said sensed brain waves;

rectifying means for rectifying said physiological signal for generating a unipolar signal;

integrating means for integrating said unipolar signal;

range detecting means for detecting whether the magnitude of the output of said integrator is in a predetermined range between a first low reference and a second high reference, the output magnitude of the integrating means being susceptible to being lower than the first reference and higher than the second reference;

counter means for accumulatively measuring the duration of the output of said range detecting means and generating therefrom a counter signal representative of the total value of the accumulatively measured durations; and

indicator means for indicating said counter signal.

4,354,506
INTRACRANIAL PRESSURE GAUGE

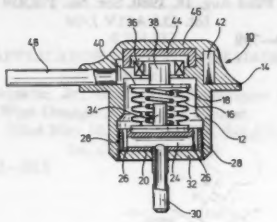
Iwao Sakaguchi, Ueda; Kunihiko Osaka, Nishinomiya; Shigenori Hokari, and Kenichi Takahashi, both of Ueda, all of Japan, assignors to Naganokeiki Seisakujo Company, Ltd., Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 113,068
Int. Cl.³ A61B 5/00
U.S. Cl. 128—748 **9 Claims**

1. An intracranial pressure gauge which comprises,

a powerless resonance circuit composed of a coil and a condenser;

a sensor equipped with a pressure-sensitive section including an evacuated bellows which is capable, when implanted



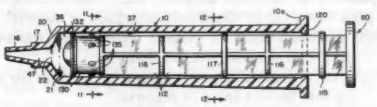
under the scalp, of changing the inductance of the said coil in response to a change in the length of the evacuated bellows with changing intracranial pressure; and

a grid dip meter capable of externally measuring the change in the resonance frequency of the said sensor.

4,354,507
SYRINGE

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Keene, N.H.

Filed Jan. 17, 1978, Ser. No. 870,118
Int. Cl.³ A61B 5/14
U.S. Cl. 128—763 **2 Claims**



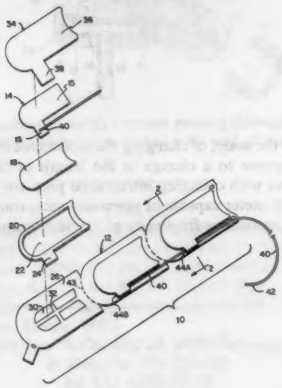
1. A disposable syringe assembly particularly suited because of the low force requirement for the operation thereof to be used for obtaining a blood sample from a patient comprising a barrel having a cylindrical inner wall and a plunger comprising a plunger stem and a compressible, elastomeric, generally cylindrical plunger tip of lesser diameter than the inner wall of said barrel, said plunger tip having an integral, annular, elastically deformable wiper extending peripherally radially outwardly and axially forwardly from said plunger tip at a forward portion thereof at an acute angle to the longitudinal center axis of said plunger tip and terminating at the outer edge thereof in a wiping edge having a minimal diameter slightly in excess of the diameter of the inner wall of said barrel, thereby forming a sealing engagement with the inner wall of said barrel, said annular wiper being the sole sealing element between said plunger tip and said wall, said plunger tip having a plurality of raised portions spaced circumferentially around said plunger tip and located at the rearward portion of said plunger tip, said raised portions when engaging said inner wall of said barrel, having a minimum of frictional contact to prevent canting of said plunger tip in said barrel, said plunger being spaced from said barrel along the length thereof so that axial movement between said plunger and said barrel is substantially free of frictional contact except for the contact by said sole sealing element.

4,354,508

ELECTRODE

Robert R. Murfitt, Chelmsford, and Richard F. Burtt, Andover, both of Mass., assignors to Vaughn Corporation, Salisbury, Mass.

Filed Aug. 18, 1980, Ser. No. 178,839
Int. Cl.³ A61N 1/04
U.S. Cl. 128—798 11 Claims



1. An electrode assembly attachable to the skin of a living body for use with signal generating means for generating an electrical signal so as to provide electrical stimulation of a predetermined area of said body, said assembly comprising:

a plurality of electrode modules, each module comprising

(a) a first sheet of electrically-conductive material;

(b) a second sheet of porous material for retaining an electrically-conductive gel material;

(c) a third sheet of material having an aperture for receiving said second sheet of material;

(d) an adhesive sheet having an adhesive layer on one side of said adhesive sheet for securing each said module to the skin of said body, said adhesive sheet including an opening smaller in its cross-sectional dimension than said second sheet; and

(e) a cover sheet secured to the side of said adhesive sheet opposite said adhesive so as to secure said first, second and third sheets therebetween in order to maintain said first sheet in contact with said second sheet and said second sheet in the aperture of said third sheet between said first sheet and said adhesive sheet, and so as to expose a portion of said second sheet through the opening in said adhesive sheet;

flexible electrically-conductive means for electrically connecting the first sheets of said modules in series with one another;

means for electrically connecting said electrically-conductive means to said means for generating said electrical signal;

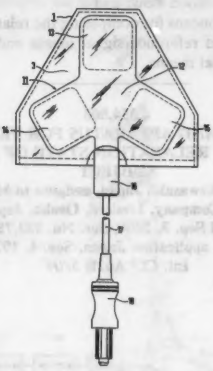
wherein the modules can each be selectively oriented and positioned with respect to the remaining modules when each module is applied to the skin of said body while maintaining electrical contact with one another, and the number of modules applied may be reduced from said plurality by severing said flexible electrically-conductive means at the appropriate location so as to reduce the number of modules to a desired number.

4,354,509

APPARATUS FOR APPLICATION OF AN ELECTRODE SYSTEM ON A PATIENT'S BODY

Franz Strahwald, Ebermannstadt, and Erich Szehi, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,799
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 7932816[U]
Int. Cl.³ A61N 1/04
U.S. Cl. 128—803 7 Claims



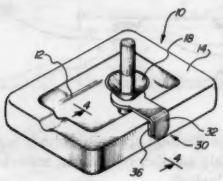
1. Apparatus for application of an electrode configuration to a patient's body; said apparatus comprising an electrode system including a flexible formed part of electrically insulating plastic, individual electrode contact means for transmitting electrical signals secured to said flexible formed part and supported thereby, and a carrier means for a contacting agent for insertion between the electrode contact means and the application location on the patient's body, characterized in that the carrier means for the contacting agent is a fleece material part (2) formed of two superimposed layers each having an exterior contour (8) slightly greater than the exterior perimeter of the formed part (12) of the electrode system (11), the fleece material part (2) having a first side for applying to the patient's body and a second side for contacting the electrode contact means, the fleece material part (2) having a covering (3) of largely impervious insulating material at said second side, said covering (3) having an exterior configuration slightly greater than the exterior perimeter of the formed part (12) of the electrode system and having a first elongated marginal edge portion detached from the fleece material part (2) to define an access opening and having a second elongated marginal edge portion secured with the fleece material part (2) to define a pocket such that the formed part (12) is inserted through the access opening and into a space between the fleece material part (2) and the covering (3), the two superimposed layers of said fleece material part (2) each having a first elongated margin portion extending adjacent but detached from the first elongated marginal edge portion of said covering (3) at said access opening, and each having a second elongated margin portion extending adjacent and secured with the second elongated marginal edge portion of said covering (3), the two superimposed layers of said fleece material part (2) having the respective first elongated margin portions thereof joined by an integral fold connection, and the respective second elongated margin portions being of configurations which are mirror symmetrical in relation to an axis coinciding with the fold connection such that the fleece material part (2) is formed from a flat single layer piece of fleece material having a fold axis and having sections of said fleece material which are mirror symmetrical at the opposite sides of the fold axis.

4,354,510

CIGARETTE SNUFFER

Lourie L. Eakin, 223 Wesley Ave., Ventura, Calif. 93003

Filed May 4, 1981, Ser. No. 259,841
Int. Cl.³ A24F *13/18*
U.S. Cl. 131—235 R 3 Claims



1. A cigarette snuffing apparatus comprising:

a tubular section having an internal chamber, said internal chamber being divided into an enlarged section and a smaller diametered section, an annular ridge separating said smaller diametered section from said enlarged section, said smaller diametered section being open to the ambient, said enlarged section connecting with the internal chamber of a guide funnel, said guide funnel being integrally secured to said tubular section, said tubular section having an exterior continuous side wall;

a sheet material bracket member, said continuous exterior surface of said tubular section being connectable to said bracket member, said bracket member being manually deformable into a configuration other than its initial configuration to facilitate attachment to a particular configuration of exterior structure, said bracket member being normally rigid, said bracket member being deformable by the application of heat to the area of the bracket member where the bending is to occur; and

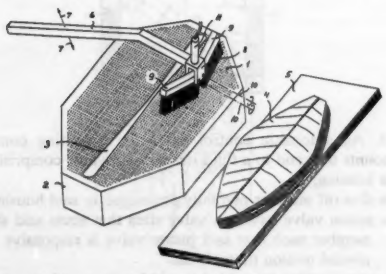
adhesive attachment means to connect with said said bracket member, said adhesive attachment means to connect with the separate structure to which the cigarette snuffer of this invention is to be connected.

4,354,511

DEVICE FOR SPREADING TOBACCO LEAVES

Ian Kjaer, Hadsund; Hans J. Moller, Harlev J, and Steen H. Nielsen, Gistrup, all of Denmark, assignors to Skandinavisk Tobakskompagni A/S, Soborg, Denmark

Filed Mar. 17, 1981, Ser. No. 244,690
Claims priority, application Denmark, Apr. 2, 1980, 1470/80
Int. Cl.³ A24B *3/00, 3/18, 5/14;* A46B *7/06*
U.S. Cl. 131—324 3 Claims



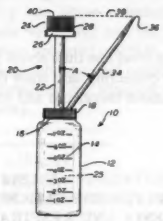
1. A device for spreading out tobacco leaves comprising means for receiving leaves, means defining a path of advance of leaves, a smoothing tool which is movable between an open and a closed position relative to said receiving means and movable relative to said path of advance, wherein said smoothing tool is deformable between a generally straight position in which it is substantially parallel to said receiving means, and a position in which its end portions have a greater distance from said receiving means than its centre portion.

4,354,512

LIQUID APPLICATOR DEVICE WITH HAIR-PARTING WAND

Michael Roppatte, Jr., Garfield, N.J., assignor to Stefan J. Klauber, West Orange, N.J., a part interest

Filed May 30, 1978, Ser. No. 910,471
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 7 Claims



1. A liquid applicator device for applying compositions to hair in the course of cosmetically treating same; said device comprising: a compressible container for receiving said composition; a cap closure being removably secured to the top of said container, and including an opening therethrough for feeding said composition upon manual compression of said container body; brush means including liquid distribution means extending from said cap along the longitudinal axis of said container and being in communication with said cap opening to enable feed of said composition to said brush upon said container compression, the applicator face of said brush means being transverse to said longitudinal axis at the upper distal end of said device; and a hair-parting wand extending from said cap at an angle diverging from the direction of extension of said brush means, the length and divergence angle of said wand being such that the perpendicular from the distal end to said brush to said wand intersects the wand substantially below the wand tip, whereby a user of said device may employ said wand to part and separate said hair without interference by said brush means, and thereupon utilize said brush means to apply said composition to the parted hair.

4,354,513

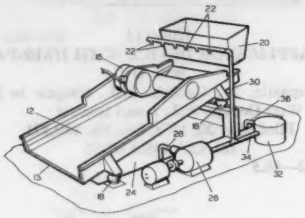
CUTTINGS WASHER ASSEMBLY

Marion G. Bingham, Houston, and Leonard D. Reagan, Spring, both of Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Dec. 15, 1980, Ser. No. 216,230
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—104 1 Claim

1. A cuttings washer assembly for removal of hydrocarbon contaminates from cuttings obtained from a fluid circulated from a subterranean well bore, comprising: a plurality of vibrating shakers, each of said shakers including an inclined vibrating screen adapted for retaining cuttings deposited thereon on the screen surface and permitting a wash fluid to pass therethrough; said shakers being arranged in series such that the second screen is arranged to receive said cuttings traveling off of a lower edge of the first screen; means at the upper end of the first screen for spraying a first wash liquid onto the cuttings deposited on the first screen; means at the upper end of the second screen for spraying a second wash liquid onto the cuttings deposited on the second screen; means for vibrating said screens to control the motion of said cuttings

down the incline of said screens and subject the cuttings to sufficient vibration to dislodge wash fluid attached thereto; each of said screens having a total length adequate to reduce the moisture adhering to the cuttings reaching the lower end of



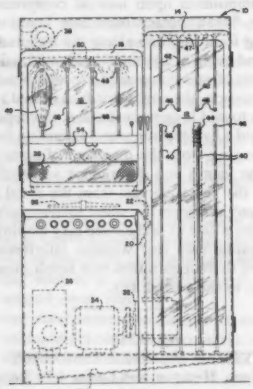
the screen to a level less than about 10% by weight; and means for separately collecting said wash fluids for removal of particulate contaminates therefrom and recirculation to said screens for reuse.

4,354,514

APPARATUS FOR CLEANING AND DRYING ANESTHESIA AND RESPIRATORY EQUIPMENT

Craig S. Sundheimer, Erie, and Bradley D. Joslin, Cambridge Springs, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Oct. 21, 1980, Ser. No. 199,187
Int. Cl.³ B08B *3/02, 9/02*
U.S. Cl. 134—152 **7 Claims**



1. Apparatus for cleaning and drying lengths of corrugated tubing, hollow articles and other items constituting components of anesthesia and respiratory equipment comprising:

a main chamber;

a plurality of substantially vertically arranged pipes disposed within said main chamber, each said pipe being adapted to receive the lumen of a length of said corrugated tubing;

each said pipe having one end in selective fluid communication with a source of cleaning liquid and a source of air;

means for selectively supplying under pressure to said pipes cleaning liquid and air from said respective sources; and

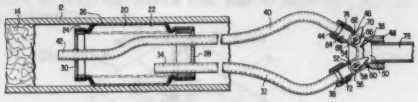
each said pipe further having longitudinally and circumferentially spaced ports for permitting said liquid and alternately said air present in said pipe under pressure to flow radially outwardly therefrom and into contact with said surrounding lumen.

4,354,515

DRAIN PIPE FLUSHING APPARATUS

Rabion C. Sutherland, 1210 Willow St., Flint, Mich. 48503

Filed Nov. 10, 1980, Ser. No. 205,165
Int. Cl.³ B08B *3/02, 9/02*
U.S. Cl. 134—167 C **6 Claims**



1. A drain pipe flushing apparatus comprising:

(a) an expansible member of resilient material insertable in a pipe to be flushed,

(b) a first manually controlled valve adapted to be connected at its inlet to a source of fluid under pressure and at its outlet to a first hose having connection to first point of said expansible chamber for filling and emptying same, and

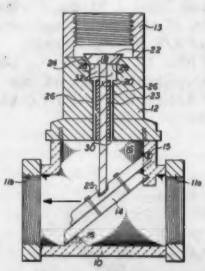
(c) a second manually controlled valve adapted to be connected at its inlet to said source of fluid under pressure and at its outlet to a second hose non-centrically disposed with respect to the first hose such that the second hose enters said expansible chamber at a second point removed from said first point and passes through the chamber for flushing said pipe where said first and second hoses extend over different paths to the expansible chamber and where said inlets of said first and second valves are connected to a common coupling member which, in turn, is connected to said source of fluid.

4,354,516

AUTOMATIC CONTROL VALVE

Ronald Newell, 118 Poplar Rd., St. Mary's, Pa. 15857

Filed Oct. 24, 1980, Ser. No. 200,468
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—98 **7 Claims**



1. An automatic control valve for providing controlled amounts of liquid to a fluid stream, said valve comprising:

a housing;

a shut-off member pivotally connected to said housing;

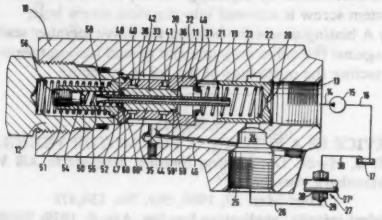
a piston valve having a valve stem that abuts said shut-off member such that said piston valve is responsive to the pivotal motion thereof; and

a core member connected to said housing, said core member forming a seat for said valve and having a valve stem sleeve for maintaining valve stem and at least one metering channel passing through said core member and in communication with said housing.

4,354,517
PRESSURE VALVE

Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 175,192
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932434
Int. Cl.³ G05D 24/00
U.S. Cl. 132—110 15 Claims

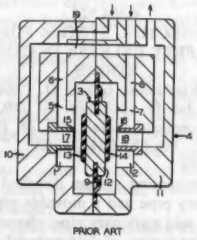


1. A valve for a pressure-medium-operated hydraulic arrangement, comprising a housing having an opening; inlet means in said housing, for entry of a pressure medium; outlet means in said housing, for exit of the pressure medium to a consumer; a distributing slide piston located downstream of said inlet means and seal-tightly movable in said opening of said housing under the action of the pressure medium entering said housing, said slide piston being arranged so that the pressure medium is subdivided into a first stream flowing directly to said outlet means and a second constant stream; a laminar throttle member located downstream of said slide piston and associated with a spring-biased control member, said laminar throttle member and said control member being arranged so that said constant stream flows through said laminar throttle member and generates pressure drop which acts upon said control member against its bias, and said control member subdividing said constant stream into two partial streams which flow to said outlet means and one of which is throttled; a spring-biased movable element acting upon said control member; and spring means arranged to bias said control member associated with said laminar throttle member toward said slide piston and also including a spring biasing said movable element toward said control member.

4,354,518
DIAPHRAGM PISTON OPERATED VALVE DEVICE

Yoichi Kuroda, and Hideo Tamamori, both of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Sep. 8, 1980, Ser. No. 184,871
Int. Cl.³ G05D 11/00
U.S. Cl. 137—112 8 Claims

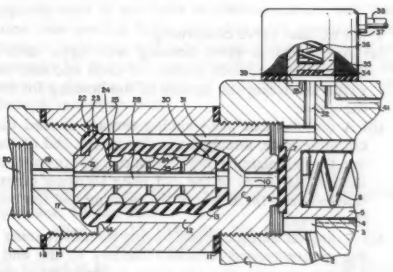


1. A diaphragm piston operated valve device comprising:
(a) a housing having a pair of valve chambers formed therein and open to respective fluid pressure input ports;
(b) a diaphragm piston operably disposed in said housing between and separating said chambers, and being subjected on opposite sides to the respective pressures prevailing in the chambers,
(c) a pair of oppositely disposed piston type valve members operably connected to said diaphragm piston;
(d) a pair of oppositely facing valve seats fixed in said housing, each opening to a common fluid pressure delivery passageway;
(e) a spring member compressibly disposed between said valve members which biases the valve members in axially opposite directions to a neutral position in which the valve members are simultaneously seated on the valve seats, respectively, to cut off communication between the valve chambers and the delivery passageway,
(f) said diaphragm piston being effective, when the pressure in one of said chambers is greater than that in the other chamber, for operating one valve member to a seated position on the adjacent valve seat and for operating the other valve member to an unseated position, relative to its adjacent valve seat, in which unseated position communication is established between the adjacent chamber and said delivery passageway.

4,354,519
NON-DRIP VALVE APPARATUS

Curt A. Bjorklund, Box 99, Stenasgatan 14, S-523 00 Ulrichehamn, Sweden

Filed Mar. 6, 1980, Ser. No. 127,764
Claims priority, application Sweden, Mar. 20, 1979, 7902479
Int. Cl.³ F16K 23/00
U.S. Cl. 137—312 7 Claims



1. A non-drip valve apparatus for regulating a fluid flow from an inlet to an outlet, comprising:
a housing having an inlet, a supply chamber, a vacuum chamber and an outlet, the supply chamber being in fluid communication with the inlet and separate from said vacuum chamber;
a first conduit extending between the supply chamber and the outlet to provide primary flow therethrough;
supply valve means at the supply chamber end of said first conduit, said valve means being selectively operable to respectively open and close said first conduit;
said vacuum chamber having a hollow wall and a regulating member therein having an exposed surface, said wall and surface defining a predetermined volume in said chamber, an elastomeric sleeve surrounding said surface and constituting a displaceable partition member therein, said member partitioning said vacuum chamber into at least two separate subchambers and operable upon displacement of said partition to expand the volume one of said subchambers and reduce the volume of the other of said subchambers, and vice versa;
a second conduit extending between said outlet and a first of said subchambers to provide a suck-back passage; and
a third conduit extending between said supply chamber and

a second of said subchambers on the opposite side of said member from said first subchamber to provide fluid pressure communication therebetween, whereby said displaceable partition member operates in response to changes in the pressure differential between the inlet and outlet to reduce and expand the volume of said first subchamber in response to the fluid pressure in said second subchamber being respectively above and below the pressure level in said first subchamber,

said regulating member having at least one groove extending along said surface, said elastomeric sleeve member operable to be displaced into said groove by pressure fluid surrounding said sleeve.

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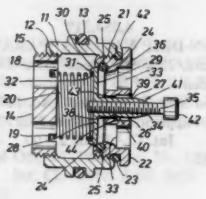
PRESSURE/DEMAND EXHALATION VALVE

Othel D. Easley, Jr., Houston, Tex., assignor to Reactor Services International, Inc., Alvin, Tex.

Filed Apr. 22, 1981, Ser. No. 256,602
Int. Cl.³ C16K *15/06*
U.S. Cl. 137—543.23 11 Claims



1. An exhaust valve comprising:

(a) A cylindrical valve housing with open ends having threads on the inside surface of each end and having a gasket incircling the outside of the housing for attaching the valve;

(b) A circular exit plate having threads around the outer circumference, attached thereby to one end of the housing, the exit plate having at least one exit opening through the circular faces of the exit plate allowing communication between the inside of the housing and the outside of the housing;

(c) A circular entrance plate having threads running around the circumference, attached thereby to the end of the housing opposite the exit plate, an entrance plate flange near the outer face of the entrance plate running around the circumference of the exit plate, an entrance plate gasket against the flange forming a seal between the entrance plate and the housing, a circular valve seat flange on the inside face of the entrance plate with a valve seat made of a resilient material in the valve seat flange, at least one entrance plate opening running from the inner face to the outer face of the entrance plate, allowing communication between the space inside the housing, within the circular valve seat flange, and the space outside of the housing, a valve stem guide hole running from the inner face to the outer face of the entrance plate at the center of the valve seat flange, the valve stem guide hole having a lip forming the entrance to the inner face, the diameter across the lip being less than the diameter of the remainder of the valve stem guide hole;

(d) A cylindrical valve member inside the housing having an inner face with a diameter between about equal to the mean diameter across the valve seat and greater than the inside diameter across the valve seat, a valve stem attached at one end to the center of the inner face of the valve member extending perpendicular to the inner face of the valve member into the valve stem hole, said valve stem having a stem diameter slightly less than the diameter across the lip, except at the end not attached to the valve member which is beveled, the length of the valve stem is such that when the valve is open, the beveled end of the stem is inside the valve stem guide hole, the valve stem and valve member having a stem screw hole running the length of the stem and through the valve member from face to face, said stem screw hole having threads on its inner surface adapted to receive a screw, a valve stem screw having threads adapted so as to screw into the stem screw hole and seal said hole, the length of said valve stem screw being such that the maximum opening of the valve is determined by adjusting the depth of which the valve stem screw is screwed into the stem screw hole;

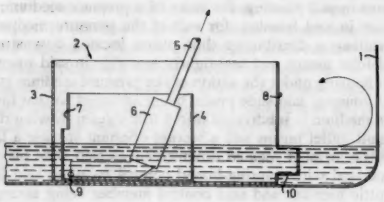
(e) A biasing means for holding the valve member sealingly against the valve seat, one end of said biasing means contacting the outer face of the valve member.

4,354,521

DEVICE IN A FUEL TANK FOR MOTOR VEHICLES

Bo T. S. Harde, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Mar. 27, 1980, Ser. No. 134,475
Claims priority, application Sweden, Apr. 6, 1979, 7903083
Int. Cl.³ F17D *1/00*; B65D *1/24*
U.S. Cl. 137—571 9 Claims



1. Device in a fuel tank for motor vehicles, comprising a container mounted on the bottom of the tank, with an inlet for fuel from the surrounding tank, the section line to the vehicle fuel pump having an opening in the container in the vicinity of the tank bottom, characterized in that a second container with a greater volume than the first-mentioned container surrounds the first-mentioned container and that both containers are provided with fuel inlets, one container having an inlet placed in a forwardly directed portion of the container and the other container having an inlet in a backwardly directed portion as viewed along the length of the vehicle, the inner container being offset in the outer container such that the distance between the inlet of the inner container and the opposing wall of the outer container is smaller than the distance between the inlet of the outer container and the opposing wall of the inner container.

4,354,522

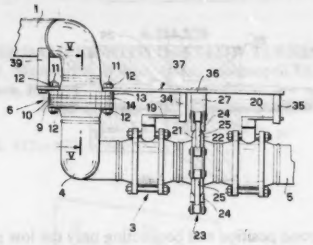
FLEXIBLE CONNECTING SYSTEM FOR PIPES WITH AUTOMATIC SAFETY RELEASE IN CASE OF TENSILE STRESS

Giorgio Bormioli, Via Galileo Galilei 11, Padova, Italy (35100)

Filed Jul. 17, 1980, Ser. No. 169,904
Claims priority, application Italy, Jul. 24, 1979, 24601 A/79
Int. Cl.³ F16L *37/00*
U.S. Cl. 137—614.02 4 Claims

1. A flexible connecting system disposed to be arranged between a stationary pipe and a movable pipe which can be moved away from said stationary pipe, characterized in that it comprises a first pipe section of rigid material connected to one of said pipes, a second pipe section of flexible material connected to the other of said pipes, a connecting pipe section of rigid material between said first and second sections fixed relative to said second pipe section and connected to said first pipe section so as to be movable with respect thereto only in

one direction and in reply to a tensile stress exerted onto said second pipe section, said connecting pipe section in turn comprising two separable parts which are releasably connected to one another by a quick-release connecting device of a kind having thereon a movable control member, and being capable of allowing the separation of said two pipe parts in reply to a



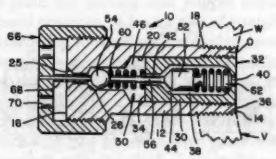
releasing force applied in a predetermined direction to said control member, and a stationary structure adjacent said connecting pipe section arranged in such a way as to be engaged by said control member and to apply to the latter said releasing force in said predetermined direction when a tensile stress exerted onto said second pipe section causes movement of said connecting pipe section in said one direction.

4,354,523

LUBRICANT FITTING FOR A VALVE

William R. Hochmuth, and William S. Shelton, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,110
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.18 **3 Claims**



1. A lubricant fitting for connection to a valve comprising:

a body having opposite inner and outer ends, said body being connected at said inner end thereof to the valve, said body having a longitudinal bore therethrough having inner and outer ends, said bore having a reduced diameter portion adjacent said outer end thereof to form a port and defining a first inwardly facing annular shoulder in said bore adjacent said port;

a plug having opposite inner and outer ends received within said bore adjacent said inner end of said body, said outer end of said plug and an inner circumferential bore wall of said body forming a chamber, said plug having a longitudinal passage therethrough by which pressure in the valve is communicated to said chamber, said passage having an intermediate portion of enlarged diameter and defining therein adjacent its outer end, a second inwardly facing annular shoulder;

a first check valve means including an outer valve seating element positioned within said chamber for normally closing said port, and a second check valve means including an inner valve seating element positioned within said plug for normally closing said passage between the valve and said chamber;

an elongate stem connected to said inner valve seating element and having a distal end normally contacting said outer valve seating element is unattached relationship therewith whereby a force applied through said port to said inner valve seating element will tend to unseat both said valve seating elements;

outer spring means disposed within said chamber for continuously urging said outer valve seating element in seating engagement with said first inwardly facing annular shoulder whereby said first check valve means normally closes said port;

inner spring means disposed within the intermediate enlarged diameter portion of said plug passage for continuously urging said inner valve seating element in seating engagement with said second inwardly facing annular shoulder whereby said second check valve means normally closes said passage, said outer spring means being operative independently of the movement of said second check valve means to urge the closing of said port by said first check valve means even if said second check valve means does not close said passage; and

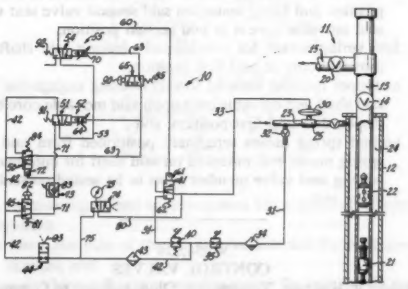
a cap-like tool detachably connected to said body at said outer end thereof, said tool comprising an internally threaded cylindrical portion at one end thereof for threaded connection to the outer end of said body and a transverse base portion at its other end, said transverse base portion having an elongate tubular projection extending coaxially through said cylindrical portion and inwardly into said bore through said port, said projection engaging said first check valve means and forcing said first check valve means away from said port when said tool is fully threaded onto said body and said first check valve means in turn acting on said stem to unseat said second check valve means so as to thereby place the opposite ends of said bore in communication, said transverse base portion being provided with openings therethrough including said tubular projection whereby said tool may be operated to relieve fluid pressure from said valve or for the injection of lubricant into said valve through said projection.

4,354,524

AUTOMATIC RESET PNEUMATIC TIMER

Robert S. Higgins, Tulsa, Okla., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 186,914
Int. Cl.³ F16K *31/126*
U.S. Cl. 137—624.14 **20 Claims**



1. An automatic reset pneumatic timer for delivering pressure signals to a motor valve to control the opening and closing of said motor valve comprising: a pressure source line; a pressure signal delivery line; a cycle timer having a pneumatic valve connected with said source line for controlling the time delay period between said pressure signal delivered by said pneumatic timer; an on timer having a pneumatic valve connected with said cycle timer for controlling the length of each

of said pressure signals; said timers each having starting means and means for moving said pneumatic valve connected thereto to a first pressure signal discharge position responsive to initiating a pressure supply to said timer, means for moving said pneumatic valve to a second position closing said pressure signal exhaust responsive to timing out, and means for reset responsive to interrupting said pressure supply to said timer; an automatic reset valve connected between said source line and said cycle timer and said on timer for interrupting pressure to said timers for resetting said timers when said cycle timer times out; and a relay valve connected between said source line and said signal delivery line and with said on timer for delivering said pressure signals to said signal delivery line responsive to said on timer.

4,354,525

ELECTROMAGNETIC VALVE

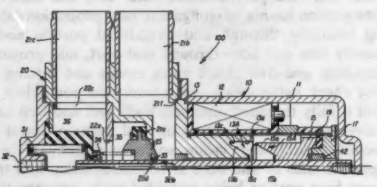
Tadashi Oyama, and Shoji Kawata, both of Okazaki, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 29, 1980, Ser. No. 173,429

Claims priority, application Japan, Aug. 29, 1979, 54-119552[U]

Int. Cl.³ F16K *11/04, 31/06*

U.S. Cl. 137—625.5 **6 Claims**



1. An electromagnetic valve assembly comprising:

a housing;

a movable core axially, movably disposed in said housing;

an electromagnetic coil positioned adjacent said movable core actuatable to move said movable core from a first position to a second position upon energization of said electromagnetic coil;

a shaft coaxial with said movable core and axially movable together with said movable core;

valve means including a valve member axially, movably mounted on said shaft, a first and second valve seat disposed in said housing, said valve member being seated on said first valve seat when said movable core is in said first position and being seated on said second valve seat when said movable core is in said second position;

first spring means for continuously biasing said shaft and movable core to said first position;

a stopper member secured to said housing engageable with said shaft and movable core upon said movable core being disposed in said first position; and

second spring means separately positioned from said first spring means and mounted on said shaft for continuously biasing said valve member so as to be seated on said first valve seat.

4,354,526

CONTROL VALVES

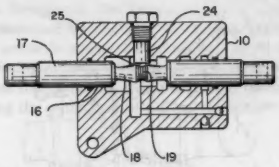
Robert F. Hodgson, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 12, 1980, Ser. No. 177,387

Int. Cl.³ F15B *13/04*

U.S. Cl. 137—625.48 **5 Claims**

1. A valve structure for use in an integral hydraulic pump and valve assembly comprising a housing adapted to be integral with a pump housing and having spaced apart low pressure and high pressure ports corresponding to the low pressure inlet port and high pressure outlet port of said pump, a low pressure chamber, a high pressure chamber and a cylinder chamber in said housing spaced apart and generally parallel to one another, a transverse bore in said housing intersecting said chambers, valve means movable axially in said bore, said valve means having an annular groove intermediate its ends capable of connecting said low pressure and high pressure chambers in a first neutral position, capable of connecting all of said chambers in a second position and connecting only the low pressure chamber in a third position, detent means in said housing extending into said bore and annular groove in the valve member, detent engaging means in said groove intermediate its ends and stroke limiting means extending into the bore and groove on opposite sides of the detent means to engage the ends of the groove when the valve member is moved in opposite directions to limit its movement.



4,354,527

CONTROL SYSTEM FOR PILOT OPERATED VALVE

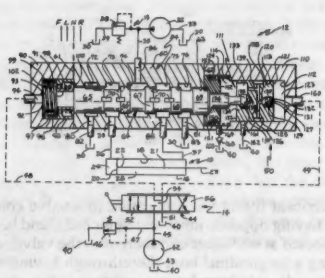
William D. McMillan, Bartlesville, Okla., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01339, § 371 Date Oct. 9, 1980, § 102(e) Date Oct. 9, 1980, PCT Pub. No. WO82/01402, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 9, 1980, Ser. No. 261,094

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—625.63 **7 Claims**



1. An apparatus (**50**) for shifting the spool (**64**) of a pilot operated valve (**34**) in one direction and changing the magnitude of a shifting force acting on the spool (**64**) in response to the spool (**64**) reaching a predetermined position in the valve (**34**) without changing the magnitude of the pilot pressure, comprising:

a source (**42**) of pressurized pilot fluid;

means (**44**) for selectively directing pilot fluid to the spool (**64**);

a housing (**110**);

a piston (**120**) connected to the spool (**64**) and reciprocally disposed in the housing (**110**) and defining first and second chambers (**123,124**);

a passageway (**128, 126, 139**) connecting the first and second chambers (**123,124**);

means (**49, 160**) for communicating pilot fluid to the first chamber (**123**);

means (127, 128, 129, 130) for controllably blocking communication of pilot fluid between the first and second chambers (123,124) through the passageway (128, 126, 139); and

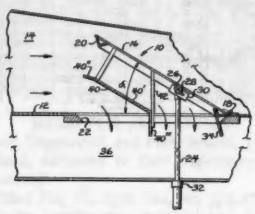
means (139, 126, 125) for venting pilot fluid from the second chamber (124) in response to the spool (64) reaching the predetermined position in the bore (63).

4,354,528

POPPET DAMPER WITH GAS FLOW TURNING MEANS

Miles J. McAndrew, Wilton, Conn., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 10, 1980, Ser. No. 214,857
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—875 5 Claims



1. A rectangular poppet damer having a poppet plate and means for mounting said damper flush in an opening in the wall of a first gas inlet duct so that the flow of gas through the duct can be selectively caused to pass either over the surface of the poppet plate of the damper when the damper is closed, or under the poppet plate surface into a second duct when the damper is opened, said poppet plate being pivotally hinged to said first duct along its downstream end for movement between its open and closed positions, an actuator rod attached to said poppet plate for moving said poppet plate between its open and closed positions, at least a pair of straightening vanes integrally attached to the underside of said poppet plate, one of said straightening vanes comprising a plate-like member affixed to said poppet plate adjacent its hinged end which extends into said second duct when the damper is opened, a second of said straightening vanes comprising a plate-like member which is affixed to said poppet plate and has an elongated intermediate portion which is generally parallel to said poppet plate and spaced therefrom, said second straightening vane further including integral lead-in and exit portions at its respective ends which are angularly positioned relative to said intermediate portion so that, when said damper is in its open position, a portion of the gas flowing in said first inlet duct will be caused to flow in a substantially non-turbulent manner, both above and below said second straightening vane, the exit portion of said second straightening vane being at such an angle as to cause the gas on either side thereof to enter said second duct in a direction generally perpendicular to the direction of flow in the first duct.

4,354,529

PIPE THREAD PROTECTOR

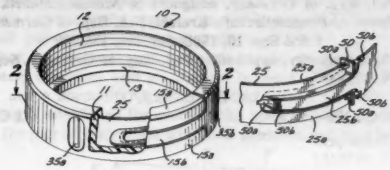
Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814, and Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806

Filed Mar. 7, 1980, Ser. No. 127,941
Int. Cl.³ B65D *59/06*
U.S. Cl. 138—96 T 2 Claims

1. A method of forming a pipe thread protector comprising the steps of:

fabricating a tubular spring having a separation along one side in the form of a plurality of interlaced fingers;

spreading said separation by installing a separating plate therebetween;



installing said spring and said separating plate on the interior of a toroidal mold conformingly mated to said separating plate; and

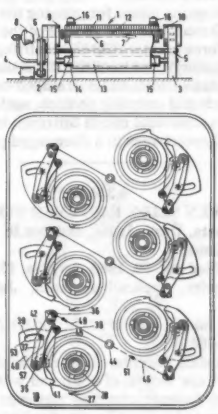
injecting resilient matter into said mold.

4,354,530

CROSSING THREAD SUPPLY SYSTEM FOR A WEAVING MACHINE

Bernhard R. Koch, Horgenberg, and Erich Vogelbacher, Horgen, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,086
Claims priority, application European Pat. Off., Jun. 11, 1979, 79101878
Int. Cl.³ D03D *5/00, 47/40*
U.S. Cl. 139—54 11 Claims



1. A crossing thread supply system for a weaving machine comprising

at least one pair of thread reserve bobbins for paying-out threads; and

a spring biased thread tensioning means for controlling each thread pay-out as a function of thread tension, said tensioning means including a control lever in the path of a thread from a respective bobbin, said lever being spring biased in a direction opposite to the direction of thread pay-out to impart a tension in the thread, and a pivoting lever actuated from said control lever and having a pawl mounted thereon for actuating the pay-out of a thread from said respective bobbin in response to a predetermined increase in thread tension.

4,354,531
ROTATION DOBBY

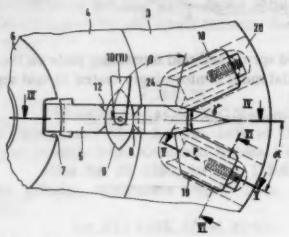
Paul Surkamp, Kempen, and Heinz Sonnenberg, Viersen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,709

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938451

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **11 Claims**



1. In a rotation dobby having a key coupling between a drive shaft and an eccentric device for a heddle movement in which the key is mounted under spring action in a radially extending recess in an eccentric disc arranged in a crank arm and is engageable and disengageable, in accordance with a pattern, into and out of an axially extending groove of the drive shaft at two diametrically opposite coupling positions by means of a shift rod which is controllable in accordance with a pattern and engages via a coupling member into a groove of the key, the latter being open in the axial direction of the drive shaft, the improvement including

compression spring means for pressing the key in an engaged position thereof into said groove of the drive shaft with a pressing force greater than the centrifugal force acting on the key during rotation of the drive shaft,

two spring-biased lock slides arranged on each said crank arm at each said coupling position, said two spring-biased lock slides constitute means for receiving an outer end of said key therebetween in a disengaged position of the key.

4,354,532
WOVEN SLIDE FASTENER STRINGER

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,758

Claims priority, application Japan, Jul. 31, 1979, 54-105805[U]

Int. Cl.³ A44B *19/42*; D03D *1/00*

U.S. Cl. 139—384 B **2 Claims**

1. A woven slide fasterner stringer compising:

a. a stringer tape woven of warp and weft yarns; and

b. a row of fastener coupling elements woven into said stringer tape along one longitudinal edge thereof;

c. said stringer tape including:

1. a first marginal portion disposed adjacent to said longitudinal edge, said weft yarns extending over one of said warp yarns and under a succeeding one of said warp yarns alternately across said first marginal portion;

2. a second marginal portion disposed adjacent to the other longitudinal edge; and

3. an intermediate portion extending between said first and second marginal portions, and having a woven structure coarser and thicker than that of said first marginal portion, the number of interlacings of said warp and weft yarns per unit area thereof being smaller than that in said first marginal portion, said weft yarns thereof extending over a group of said warp yarns and under a succeeding group of said warp yarns alternately across said intermediate portion, the warp yarns in each of said group being disposed in a row, the number of said warp yarns in said groups increasing gradually from the group adjacent to said first marginal portion to the group adjacent to said second marginal portion.

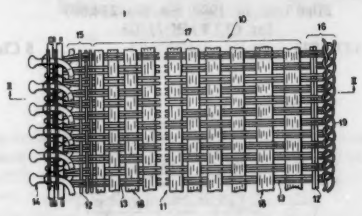
2. A woven slide fastener stringer comprising:

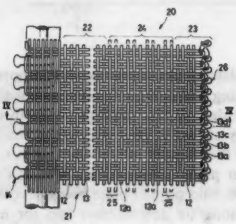
a. a stringer tape woven of warp and weft yarns; and

b. a row of fastener coupling elements woven into said stringer tape along one longitudinal edge thereof;

c. said stringer tape including:

1. a first marginal portion disposed adjacent to said longitudinal edge;





2. a second marginal portion disposed adjacent to the other longitudinal edge; and

3. an intermediate portion extending between said first and second marginal portions, and having a woven structure coarser and thicker than that of said first marginal portion, the number of interlacings of said warp and weft yarns per unit area thereof being smaller than that in said first marginal portion, the warp yarns thereof being arranged in a plurality of groups, the warp yarns in each group lying over and under one another.

4,354,533
AUXILIARY NOZZLE FOR JET LOOMS

Hajime Suzuki, Anjo, and Hiroshi Arakawa, Kariya, both of Japan, assignors to Kabushiki Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 28, 1980, Ser. No. 154,119

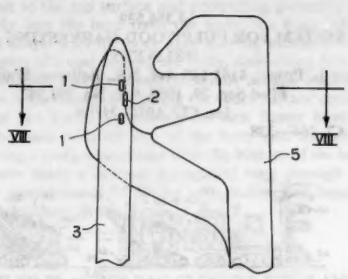
Claims priority, application Japan, May 31, 1979, 54-72531[U]

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **16 Claims**

1. Improved auxiliary nozzles in a jet loom which comprises a fluid and weft guiding passage formed on a slay by guide members and extending in the filling direction and a plurality of said auxiliary nozzles provided in spaced relation to each other along said guiding passage and adapted to discharge jets of fluid through fluid outlet openings thereof; each of said auxiliary nozzles having therein a first outlet opening having a weft pick assisting function and a second outlet opening having a weft pick stabilizing function; and said outlet openings being

positioned to discharge jets of fluid into said fluid and weft guiding passage with a distance between the axes thereof along



the axial direction of said auxiliary nozzle and directed in such a way that the axes thereof will form an angle therebetween.

4,354,534

REED FOR JET LOOMS

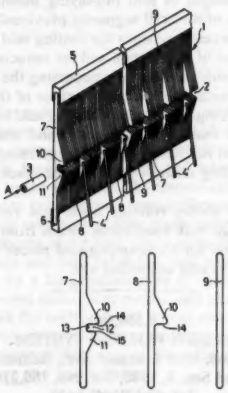
Heinrich Sulser, Rapperswil, and Peter Stucki, Tann-Rüti, both of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Jun. 11, 1980, Ser. No. 158,373

Claims priority, application Switzerland, Jun. 13, 1979, 5522/79

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 **7 Claims**



1. A reed for a jet loom in which the filling yarns are introduced into the shed by means of a gaseous fluid which is expelled by nozzles arranged, spaced apart from each other, over the loom width which periodically enter into the shed; having first reed blades having a profiling with a recess on their one edge, the said recesses forming as a whole a guide channel for the filling yarns, characterized by the fact that in the region of the projection of the nozzles onto the reed there are provided second reed blades which on their one edge have a shape which differs from the profiling of the first reed blades.

4,354,535

HAND-HELD AUTOMATIC WIRE BINDING TOOL

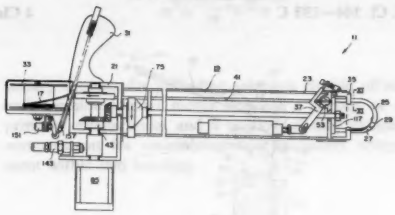
Robert Y. Powell, 750 Adams, Memphis, Tenn. 38105, and Jeff A. Fisher, 12205 Greenlead Dr., Huntsville, Ala. 35803

Filed Apr. 21, 1980, Ser. No. 142,394

Int. Cl.³ B21F *15/04*

U.S. Cl. 140—93 A **11 Claims**

1. A tool for binding a pair of juxtapose elongate structural members together by utilizing a supply of wire said tool comprising a main body member having upper and lower ends thereto, a pair of jaws disposed adjacent the lower end of said main body member and defining in part a hole through which the pair of structural members may freely extend, at least one of said pair of jaws being pivotally mounted to said body member, jaw operating means coupled to the pivotal jaw(s) for remotely operating said pivotal jaw between a "closed position" and a normally "open position" wherein a mouth-like opening is established for enabling the open jaws to be passed over the pair of juxtaposed structural members and thus being



admitted to the hole, wire guide means for establishing a channel through which the wire may longitudinally be passed, means for feeding the wire through said wire guide means, wire shear means for shearing the wire, means for twisting the wire around the pair of juxtaposed structural members, and rotary actuator means operable in a forward and reverse rotational direction for operating said wire feeding means to feed wire through said guide means when rotating in a forward direction, and operating said wire twisting means to twist the wire around the pair of juxtaposed structural members when rotating in a reverse direction.

4,354,536

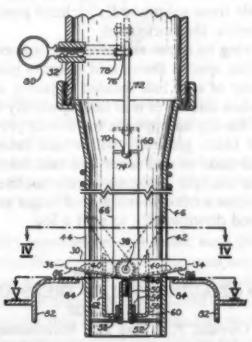
GASOLINE DISPENSING NOZZLE

Jack Moss, 3400 NW. 48th Ave., Lauderdale Lakes, Fla. 33319

Filed Apr. 9, 1980, Ser. No. 138,605

Int. Cl.³ B65B *3/04*

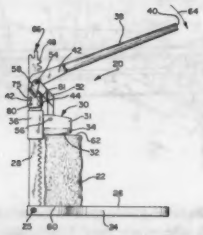
U.S. Cl. 141—383 **8 Claims**



1. A nozzle for dispensing gas into a vehicle gas tank having an entrance pipe provided with a radially inwardly directed cap flange, comprising an elongated tube adapted to be axially inserted within the entrance pipe of said vehicle gas tank, a pair of toggle bars pivotally mounted about a common axis within said nozzle, said nozzle having a pair of diametrically opposed slots through which said toggle bars may move, a coil spring mounted about said axis, normally biasing said toggle bars in opposition to each other, extending outwardly through the respective slots, said toggle bars being movable between a first

position extending radially outwardly through said slots into position to engage beneath said cap flange, and a second position retracted radially inwardly of said nozzle free of said cap flange, and means for selectively actuating said toggle bars into said first or second position.

4,354,537
WOOD SPLITTING DEVICE
Carl E. Balkus, 176 Deepwood Dr., Amston, Conn. 06231
Continuation-in-part of Ser. No. 136,330, Apr. 1, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,421
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **4 Claims**

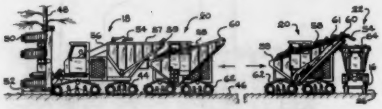


1. Apparatus for splitting firewood comprising:
a base for supporting a log to be split,
a post mounted to said base and havng teeth in one edge, which teeth project toward the log and define recesses therebetween,
a sleeve slidably received on said post,
a blade of wedge shape mounted on said sleeve and adapted to split a log as a result of downward movement of said sleeve and blade along said post,
an operating lever with a free end and an end defining a depending crank arm forming a yoke with portions on either side of said post,
a fulcrum pin adjacent the lower ends of said depending crank arm yoke portions and an intermediate portion of said fulcrum pin adapted to be received in one of said recesses between said teeth so that said lever is pivotally movable from an upwardly inclined position to a position at or below the horizontal,
a link having its upper end pivotally connected to said lever at a point spaced above said fulcrum pin, said upper pivoted end of said link located adjacent said teeth of said post when said lever is in said upwardly inclined position,
said link having an opposite lower end pivotally connected to said blade generally below said fulcrum so that said pivoted ends of said lever and said fulcrum pin form an oblique triangle in the upwardly inclined lever position and assume a triangular shape of larger area as said handle is moved downwardly to split a log.

4,354,538
METHOD OF AGING FELLED TREES AND TREATING LUMBER
Thomas E. Oswald, P.O. Box 363, Montesano, Wash. 98563
Continuation-in-part of Ser. No. 131,168, Mar. 17, 1980. This application Nov. 24, 1980, Ser. No. 210,061
Int. Cl.³ B27H *1/00*
U.S. Cl. 144—335 **24 Claims**

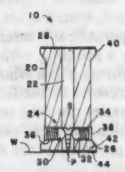
1. The method of deterring warping and checking of lumber which comprises felling a tree, long-butting the felled tree, applying a seal covering the surface of the tree trunk butt end prior to aging the felled tree without substantial penetration of the seal into the wood to deter penetration into the interior of the tree trunk of bacteria and fungi which promote decay, including stain, mold and rot, aging the felled, long-butted and butt-sealed tree without removing the bark from the tree trunk, and sawing the log of the aged tree into lumber.

4,354,539
SYSTEM FOR PULPWOOD HARVESTING AND DELIVERY
Robert L. Propst, 4141 145 Ave. NE., Bellevue, Wash. 98007
Filed Sep. 29, 1980, Ser. No. 191,947
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—338 **21 Claims**



1. A pulpwood harvesting system for cutting and transporting trees upon a fragile terrain so as to have a dispersed and minimal impact on the terrain, comprising:
a plurality of spaced vertical pilings inserted into the terrain so as to protrude above the terrain, said pilings arranged along a predetermined route extending from at least one harvesting site to at least one unloading site;
a rail network consisting of rail segments mounted on said pilings so as to form a continuous railway having at least two parallel rails supported by said pilings above the terrain over said predetermined route;
mobile rail-laying means for progressively installing said rail network by installing said rail segments upon said pilings while the weight of said rail-laying means is supported upon others of said rail segments previously installed;
mobile tree harvesting means for cutting said trees adjacent to the surface of said terrain and for reducing said trees to bulk-handleable pieces while dispersing the weight of said harvesting means over a large surface of the terrain;
mobile forwarding means for receiving said bulk-handleable pieces from said harvester means and transporting said pieces to said rail network while dispersing the weight of said forwarding means over a large surface of the terrain; and
a plurality of lorries rollable upon said rail network for receiving said bulk-handleable pieces from said forwarding means and for transporting said pieces from said harvesting site to said unloading site.

4,354,540
SCREW HOLDER SYSTEM
Robert T. Jefferson, 4604 Luerssen Ave., Baltimore, Md. 21206
Filed Sep. 8, 1980, Ser. No. 185,219
Int. Cl.³ B25C *3/00*
U.S. Cl. 145—46 **7 Claims**



1. In a system for screw holding comprising a body with a bore axially therethrough and means in the bore for resiliently holding a screw centered for driving into a work surface, the improvement comprising in combination: reversible means to accommodate both relatively long and relatively short screws including: the body having a top surface and a bottom surface

in parallel spacing transverse to the bore, the screw holding means being substantially the same in construction, top and bottom; the screw centering means being closer to the bottom surface than to the top surface and protruding generally perpendicularly into the bore from the body, the body having cylindrical shape with the bore axial therein, means for protecting fingers of a user holding the body, comprising first and second spool-like flanges circumferentially around respective ends of the body, means increasing the work surface contacting area of the body, comprising the first flange having a portion co-planar with the top of the body and the second flange having a surface co-planar with the bottom of the body, and the bore being a uniform cylindrical bore through said body and proportioned for fitting and guiding the heads of screws passed through the bore.

4,354,541

PROFILED PLASTICS BAG CLOSURE STRIP AND ADHESIVE BONDING METHOD

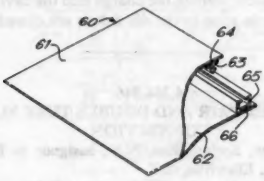
Paul A. Tilman, Canvey Island, England, assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,471

Claims priority, application United Kingdom, Sep. 13, 1979, 7927390

Int. Cl.³ B65D *33/24*

U.S. Cl. 150—3 **15 Claims**



1. Material for making a reclosable bag, and including a thin sheet-like substrate material and a plastic closure strip having closure profile means projecting oppositely to a base surface having opposite longitudinal edges and adapted to be adhesively secured to the substrate, the improvement comprising:

adhesive means between said base surface and said substrate for securing said base surface to the substrate;

and spacer means along said edges extending between said base surface and said substrate, said spacer means being separated by a longitudinal area of said base surface located between said spacer means, said base surface having many times the width of said spacer means, and said base surface being inset relative to said spacer means for assuring a substantial thickness of the adhesive between said base surface and said substrate.

4,354,542

HANDBAG

Edward L. Gerch, Chicago, Ill., assignor to Kingport, Ltd., Evanston, Ill.

Filed Jan. 23, 1981, Ser. No. 227,987

Int. Cl.³ A45C *13/40*

U.S. Cl. 150—34 **6 Claims**

1. In a handbag of the type including opposed front and back side walls connected along at least a portion of their periphery by a narrow elongate web defining a bottom surface and opposed end walls of said handbag, a portion of the said periphery of walls defining a primary opening adjacent a top of said handbag for providing access to a primary compartment extending inwardly of said handbag from said primary opening therein, means for closing said primary opening on said handbag positioned adjacent the top thereof, and means for carrying said bag;

an improvement comprising a secondary compartment in said handbag positioned adjacent the bottom thereof and extending inwardly into said handbag and including an elongate secondary opening on said bottom surface oriented longitudinally therealong for providing user access thereto, means on said bottom surface adjacent said secondary opening for providing selective closing of same, and common joinder means between a portion of said primary compartment and a portion of said secondary compartment for maintaining said secondary compartment within said handbag.

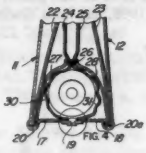


FIG. 4

4,354,543

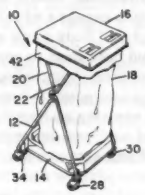
PORTABLE HAMPER

Paul Bogner, 1585 Sunflower Ave., Costa Mesa, Calif. 92626

Filed Nov. 10, 1980, Ser. No. 205,372

Int. Cl.³ B65D *30/00*

U.S. Cl. 150—50 **19 Claims**



1. A material collection hamper comprising:

a pliant bag having sides, a closed bottom and an upper portion surrounding an openable top;

a frame comprising means for holding said upper portion of the bag with its top spread open and such that the remainder of the bag extends downwardly from said upper portion;

a cover pivotally mounted on said frame such that in a first pivotal position the cover overlies the open top of said bag and such that in a second pivotal position the cover is removed from the region overlying said bag;

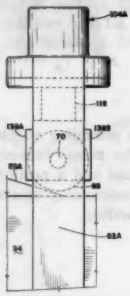
said cover including stop means for engaging said frame as a stop when the cover occupies said second pivotal position and having a center of gravity such that said cover is urged downwardly over said bag opening when in said first position and such that said means is urged against said frame when in said second position;

said cover further comprising cover closure means normally engaging a side of said bag when the cover is in said second position for urging said cover to pivotal movement from second to first position as an incident to the side of the bag being stretched taut by the placement of material into the bag.

4,354,544
TIRE BEAD DEMOUNTING TOOL

Finis L. Chisum, P.O. Box 1145, Claremore, Okla. 74017

Continuation-in-part of Ser. No. 958,106, Nov. 6, 1978, Pat. No. 4,256,161. This application Jun. 13, 1980, Ser. No. 159,212
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ B60C 25/06
U.S. Cl. 157—1.17 7 Claims



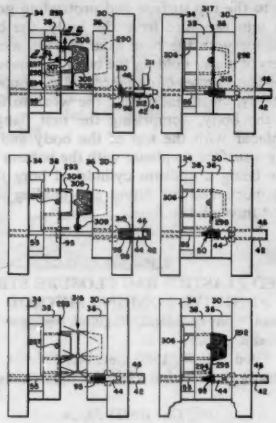
1. A tool for breaking the circumferential bead of a tire from the inward surface of the lip of a wheel rim, comprising:
- a body having a forward downwardly extending rim engaging tooth;
- a bead head slidably supported by said body;
- an arm pivotally supported to said body having an outer end configured to engage the exterior surface of the lip of a wheel rim;
- an arm actuator slidably supported by said body;
- means for longitudinally sliding said arm actuator to first pivot said arm to engage a wheel rim lip between said arm outer end and said body tooth and subsequently slidably advancing said bead head to engage the bead of a tire to force the bead away from the wheel rim lip; and
- hydraulic means interposed between said arm actuator and said arm for applying a selectable force to cause pivotal movement of said arm in response to the longitudinal movement of said arm actuator.

4,354,545
MODIFIED PRESSURE CASTING PROCESS

Walter M. Goldhammer, 23300 Shaker Blvd., Cleveland, Ohio 44122

Filed May 16, 1980, Ser. No. 150,596
Int. Cl.³ B22D 17/10, 17/32
U.S. Cl. 164—457 36 Claims

1. A die casting process comprising the steps of forming a charge of molten metal and moving such charge to a position proximate a gate runner while the dies halves are open, and then shifting the charge into communication with the gate

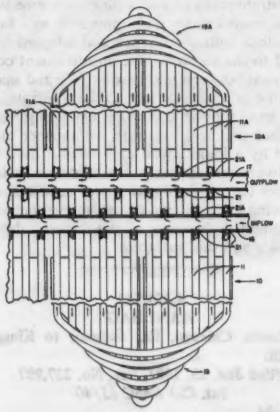


runner and pressure forcing the charge into the cavity through the gate runner as soon as the die halves are closed.

4,354,546
HEADER PAIR AND DOUBLE TUBE MAT CONNECTION

Michael F. Zinn, Spring Glen, N.Y., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,825
Int. Cl.³ F28F 7/00
U.S. Cl. 165—1 14 Claims



1. A method of interconnecting a pair of headers for circulating inflow and outflow fluid respectively with first and second extended flexible tube mats each formed of a plurality of tubes cojoined side-by-side with the end portions thereof separated from one another, which comprises
- (a) disposing the first mat in a plane to that side of the inflow header opposite the outflow header so that all tubes thereof extend away from and then loop back toward said inflow header,
- (b) disposing the second mat in the same plane to that side of the outflow header opposite the inflow header so that all

tubes thereof extend away from and then loop back toward said outflow header,

(c) connecting the opposite separated end portions of each tube in the first mat with the inflow and outflow headers respectively through first spaced holes in that side of each header on which the first mat is disposed, and

(d) connecting the opposite separated end portions of each tube in the second mat with the inflow and outflow headers respectively through second spaced holes in that side of each header on which the second mat is disposed.

4,354,547

DISCHARGE AIR TEMPERATURE CONTROL DEVICE HAVING REFERENCE TEMPERATURE CONTROL FUNCTION FOR AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES

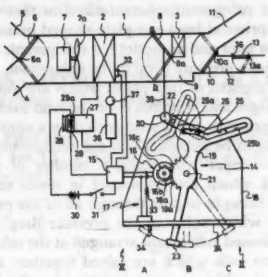
Hiroyuki Sugiura, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Oct. 3, 1980, Ser. No. 193,650

Claims priority, application Japan, Oct. 11, 1979, 54-140728[U]

Int. Cl.³ F28F *27/02*

U.S. Cl. 165—25 9 Claims



1. A discharge air control device for use in an air conditioning system for automotive engines, the air conditioning system including a compressor, an electrical circuit for driving said compressor, an evaporator core operatively connected to said compressor, a heater core arranged at a location downstream of said evaporator core, a passage by-passing said heater core, and a pivotable air-mix damper disposed to guide an air flow from said evaporator core, respectively, through said by-pass passage alone at a first angular position thereof, through said heater core along at a second angular position thereof, and through both said by-pass passage and said heater core at a position between said first angular position and said second angular position,

said discharge air control device comprising:

lever means coupled to said air-mix damper for controlling the angular position of said air-mix damper, said lever means being disposed to hold said air-mix damper at said first angular position when said lever means is angularly displaced within a first angular range, and to allow said air-mix damper to be pivoted in a continuous manner within a range between said first angular position and said second angular position when said lever means is angularly displaced within a second angular range;

a temperature sensor for detecting the temperature of said air flow from said evaporator core;

switch means coupled to said temperature sensor and operable to close said electrical circuit to actuate said compressor when said temperature sensor produces an output signal exceeding a value corresponding to a predetermined reference value of said air flow temperature, and to open said electrical circuit to render said compressor inoperative when said temperature sensor produces an output which is below a value corresponding to said reference value of said air flow temperature; and

means responsive to a change in the angular position of said lever means to vary said reference value of said air flow temperature.

4,354,548

DEVICE FOR HEATING LIQUID FOR ONE OR SEVERAL WASHER SYSTEMS

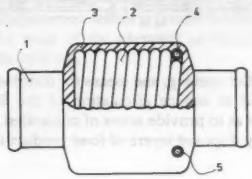
Bror-Erland Carlsson, Falkmansgatan 6, S-311 00 Falkenberg, Sweden

Filed Apr. 23, 1979, Ser. No. 32,443

Claims priority, application Sweden, Apr. 24, 1978, 7802170; Mar. 13, 1979, 7902231

Int. Cl.³ F28D *7/10*; F28F *9/22*

U.S. Cl. 165—41 3 Claims



1. A device for heating liquid for one or several washer systems, e.g. wind screen washer system, a head lamp washer system, a rear screen washer system, etc., including a heat exchanger, preferably connected into a return pipe from the engine of a car to the cooling system of the engine, characterized in that the heat exchanger comprises of a central flow through conduit connected into said return pipe and formed of a material of high thermal conductivity, said central flow through conduit being of short length, a further flow through conduit connected into the piping of the washer system and formed of a material of high thermal conductivity, said further flow through conduit being wound in more than one layer on said central flow through conduit and without penetrating the central flow through conduit, said further flow through conduit including a helically wound first layer and a helically wound second layer which are connected together in series, said first layer being in contact with the exterior of said central flow through conduit, said second layer being wound on and in contact with said first layer, said further flow through conduit having an inlet end positioned in said first layer which is closest to the central flow through conduit; said further flow through conduit having its outlet end positioned in said second layer which is furthest from the central flow through conduit, valve means arranged between the heat exchanger, the washer nozzle, the washer liquid container and a pump of the washer system, said valve means being operable to prevent return flow of washer liquid from the nozzle to the heat exchanger.

4,354,549

INDUCED CIRCULATION OVEN OR COOLER

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220

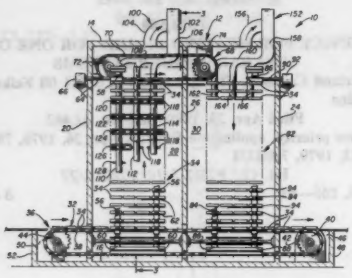
Filed Sep. 14, 1979, Ser. No. 75,803

Int. Cl.³ F25B *13/00*

U.S. Cl. 165—62 30 Claims

1. A food processing unit, comprising: a housing adapted to receive vertically disposed layers of food product; heat transfer means for controlling the temperature within said housing when processing the food product; means for supplying a pressurized fluid in said housing; directing means for directing a flow of fluid from said pressurized fluid supplying means in a substantially horizontal direction through the space vertically located between the layers of food product, said directing means including a plurality of nozzles disposed in rows along

a side of the layers of food product, the nozzles being disposed to direct the fluid in the horizontal direction, the rows being displaced from one another by a distance of two layers of food product, and the nozzles of each row having approximately the



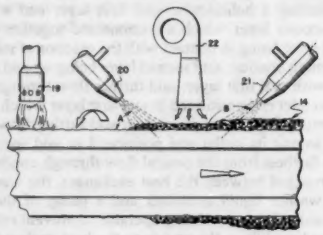
same size outlet opening; and means for distributing the flow of directed fluid to induce circulation of the fluid within the housing such as to provide zones of controlled heat transfer to the vertically disposed layers of food product throughout said housing.

4,354,550

HEAT TRANSFER SURFACE FOR EFFICIENT BOILING OF LIQUID R-11 AND ITS EQUIVALENTS

Robert J. Modahl, Galesville, and Virgil C. Luckeroth, La Crosse, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed May 7, 1981, Ser. No. 261,342
Int. Cl.³ B05D *3/08, 1/10*
U.S. Cl. 165—133 **18 Claims**



1. A heat transfer surface, especially efficient in boiling liquid refrigerant-11 and its equivalents, produced by a process in which a flame-spraying apparatus is used, said process comprising the steps of:

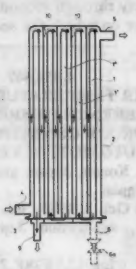
flame-spraying a metal substrate with metallic particles which are at least partly oxidized by heat and excess oxygen provided in the flame, the flame-spraying apparatus being oriented such that the metallic particles impact the metal substrate at an angle in the range of 45° to 60°, depositing on the substrate an open-cell, porous coating at least 15 mils thick, said coating comprising oxidized metallic particles, parts of which are fused to the substrate and to each other, the open cells of said coating forming a substantial quantity of nucleate boiling cavities having an equivalent radius of 1.5 to 4 mils.

4,354,551

HEAT EXCHANGER

Ingmar Kristoffersson, Rönninge, and Gustav S. Heurlin, Trangsund, both of Sweden, assignors to Alfa-Laval AB, Sweden

Filed May 21, 1980, Ser. No. 151,803
Claims priority, application Sweden, May 25, 1979, 7904587
Int. Cl.³ F28F *3/00*
U.S. Cl. 165—166 **2 Claims**



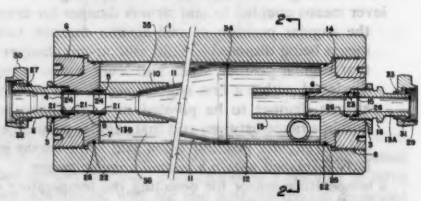
1. Heat exchanger for cooling a fluid by the evaporation of a compressed refrigerant, characterized in that the heat exchanger comprises at least one plate-shaped pressure cell provided with an inlet and an outlet for refrigerant, and a means which achieves a pressure drop in the refrigerant, at which the pressure cell consists of thin plates which are joined together along their edges and at points over the heat exchanging area and that the pressure cell is surrounded by a container for the fluid which is to be cooled when the refrigerant changes its state, the exchanger comprising a number of plate-shaped pressure cells which are connected in series such that the refrigerant is brought to pass through all of the pressure cells, and a means which achieves the pressure drop in the compressed, condensed refrigerant arranged at the inlet to the first of the pressure cells which are joined together, an outlet for the evaporated refrigerant being arranged at the last pressure cell, each pressure cell being divided into two halves by means of a longitudinal joint in such a way that the inlet for refrigerant to the pressure cell is arranged in one half and the outlet for refrigerant in the other half, both halves being connected to each other at the opposite end of the pressure cell.

4,354,552

SLURRY CONCENTRATOR

Warren M. Zingg, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1980, Ser. No. 185,065
Int. Cl.³ E21B *34/16, 43/267;* B01D *21/26*
U.S. Cl. 166—90 **16 Claims**



1. A slurry concentrator comprising:

a housing having a first end and a second end, the housing defining a bore of generally circular cross section and having an axis of generation extending from the first end to the second end,

the housing adjacent the first end defining an entrance passage

which is generally tangentically disposed relative to said bore,

a hollow cylindrical conduit having a diameter approximating the diameter of the bore which is positioned in a nonrotable manner within the bore and adjacent the first end of the housing, the conduit having an entrance opening in alignment with said entrance passage,

a hollow frustoconical member having a lesser end and a greater end disposed within the bore, the greater end being disposed generally adjacent the first end of the housing and said hollow cylindrical conduit and having a diameter approximating the diameter of the bore, the lesser end being disposed generally remote to the first end of the housing,

a first end closure affixed to the housing, supporting therein a first discharge conduit which is generally coaxial to the bore and which extends into the bore and into the conduit beyond the entrance passage, but does not extend into the frustoconical member,

a second end closure affixed to the housing, supporting therein a second discharge conduit which is generally coaxial to the bore and which is in fluid communication with the lesser end of the frustoconical member,

the external surface of the frustoconical member and the adjacent surface of the housing defining a generally annular space, and

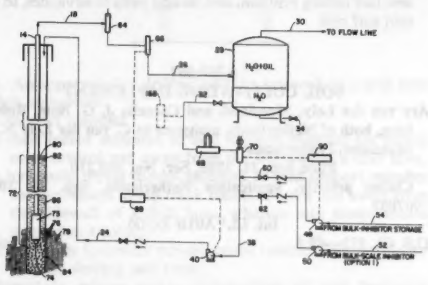
fluid communication means between the annular space and the space internal to the frustoconical member.

4,354,553

CORROSION CONTROL DOWNHOLE IN A BOREHOLE

Clifford J. Hensley, 310 W. Illinois, Suite 315, Midland, Tex. 79701

Filed Oct. 14, 1980, Ser. No. 196,677
Int. Cl.³ E21B *43/12, 43/40, 47/00*
U.S. Cl. 166—244 C **17 Claims**



4. In an oil well which produces hydrocarbons and water, and wherein the lower borehole annulus has a hydrostatic head comprised of a mixture of water and hydrocarbons adjacent the pay zone and separated hydrocarbons at a location above the water and hydrocarbon mixture, the method of treating the wellbore with treatment chemical comprising the steps of:

(1) flowing produced fluid from the well and separating at least part of the water from the produced fluid;

(2) admixing treatment chemical with the separated water of step (1) to provide an intimate mixture of produced water and treatment chemical;

(3) continuously flowing the mixture of step (2) into the borehole annulus and gravitating the mixture down through the separated hydrocarbon part of the fluid column contained within the annulus at a rate which causes most of the treatment chemical to arrive at the water and hydrocarbon mixture of the lower borehole.

10. Apparatus for treating oil wells with corrosion inhibitor chemical, comprising:

a separator, means for measuring the conductivity of produced fluid, means for measuring the corrosion rate of produced water, a mixing means by which water and treatment chemicals are admixed together to provide an intimate mixture of chemical and separated well water;

means connecting said separator to the well head for separating produced hydrocarbons from at least part of the produced water; a source of inhibiting chemical;

means connecting said separated water to said mixing means;

means connecting said source of inhibitor chemical to said mixing means; and means connecting said mixing means to the upper annular area of the oil well;

means controlling the rate of chemical flow in proportion to the corrosion measurement of the produced fluid to thereby provide a concentration of inhibitor chemical in the well which effectively controls the corrosion rate downhole in the borehole; and,

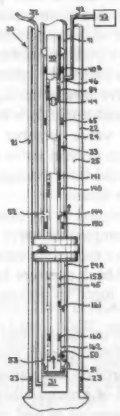
means controlling the rate of flow of water through the mixing means proportional to the conductivity measurement so that a mass flow rate of mixed chemical and water is supplied to the annulus in an amount to force the mixture down through the hydrostatic head of the wellbore during a time interval which is less than the time interval required for most of the chemical to separate from the water of the mixture.

4,354,554

WELL SAFETY VALVE

Michael B. Calhoun, Carrollton, Tex.; Robert L. Holland, Jr., Ventura, Calif., and Paul D. Scott, Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 21, 1980, Ser. No. 142,096
Int. Cl.³ E21B *34/10, 34/16, 43/12*
U.S. Cl. 166—321 **20 Claims**



1. A well safety valve comprising: a longitudinal valve housing; means in said housing defining a longitudinal central flow passage and a separate longitudinal annular flow passage; valve means in said central flow passage; valve means in said annular flow passage; recirculating valve means between said central and said annular flow passage; and means coupled with said valves for simultaneously opening said recirculating valve and closed both said central and said annular flow passage valves and for simultaneously closed said recirculating valve and opening both said central and said annular flow passage valves.

4,354,555

HYDRAULIC LIFTING ARRANGEMENT FOR IMPLEMENTS, ESPECIALLY ON TRACTORS

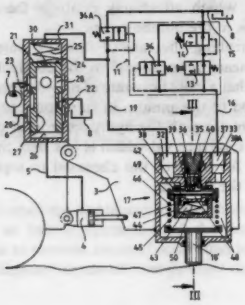
Armin Lang, Schwaebisch Gmuend, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,946

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943994

Int. Cl.³ A01B *63/114*

U.S. Cl. 172—4 16 Claims



13. In a system with a ground level sensing means associated therewith, said sensing means being adapted for controlling a pump and hydraulic power cylinder to vary the elevation of an agricultural implement in response to said ground level sensing means;

the improvement which comprises:

a regulator valve means (6), a comparator valve means (17) connecting thereto, and a back pressure control means (14) connecting to said comparator valve means;

said regulator valve means including means operative to effect a flow from a pump to said comparator valve means and to and from a hydraulic cylinder;

said comparator valve means having a valve member (36) conconected to receive said flow and including means (40) upstream of said valve member whereby said flow is operative as a force on said valve member in the opening direction to pass said flow through said valve member to said back pressure means;

said back pressure means being operative to effect a back pressure in said comparator valve means;

said comparator valve means including means (44) operative in response to said back pressure in said comparator valve means to effect a force to oppose opening of said valve member;

said comparator valve means also including means (46) operative in response to said ground sensing means to effect a varying force on said valve member in response to sensing rise or fall of ground whereby said varying force effects a varying opening of said valve member to effect a variation in the flow pressure from said regulator valve means acting on said valve member;

said regulator valve means including a valve element (21) and means (24, 26) operative in response to said variation of flow pressure for actuating said valve element to control pump flow through said regulator valve means to or from said hydraulic power cylinder for lifting or lowering an implement responsive to sensing of variation in ground level and to shut off said flow to said valve member when flow is from said hydraulic power cylinder to said regulator valve means.

4,354,556

TURF CUTTING AND ROLLING APPARATUS

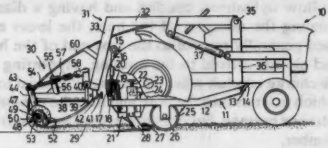
Mervyn L. Evans, 3 Little St., Chinchilla, Queensland, 4413, Australia

Filed Nov. 9, 1981, Ser. No. 319,422

Claims priority, application Australia, Nov. 10, 1980, PE6411; Apr. 3, 1981, PE8304

Int. Cl.³ A01B *45/04*; B65H *17/46*

U.S. Cl. 172—19 4 Claims



1. Apparatus for cutting, rolling and laying turf, of the type including a vehicle with a wheel-mounted main frame, and a pair of upright side cutters and a transverse bottom cutter mounted on said main frame and adapted to cut a turf strip as said vehicle advances, wherein:

a lift frame is mounted on said main frame,

a roller is mounted on said lift frame for pivotal movement about a substantially upright axis,

said roller being adapted to be pivoted on and lowered by said lift frame to a turf rolling position lying on and engaging said turf strip and winding said turf strip on it as said vehicle advances,

said roller being further adapted to be raised by and pivoted on said lift frame to an unloading position extending rearwardly of said vehicle,

said roller being further adapted to be pivoted on and lowered by said lift frame to a turf laying position displaced 180° from said turf rolling position, and, as said vehicle advances, to lay said turf roll.

4,354,557

SOIL CULTIVATING IMPLEMENT

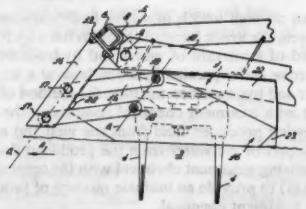
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Sep. 24, 1980, Ser. No. 190,210

Claims priority, application Netherlands, Sep. 24, 1979, 7907081

Int. Cl.³ A01B *33/06*

U.S. Cl. 172—49.5 12 Claims



1. A soil cultivating implement comprising a frame structure and a row of soil working members mounted on an elongated portion of said structure, said portion extending transverse to the direction of implement travel, an upwardly extending screening plate positioned adjacent at least one lateral side of said frame portion and said plate being pivoted to said structure by links, said links being spaced apart and positioned one above the other, said links extending forwardly from pivot connections to said plate to a support on said structure, a plane containing the pivotal connections of said links to said plate

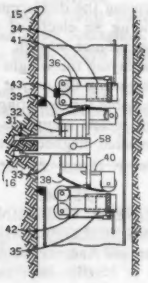
being inclined upwardly and rearwardly with respect to the normal direction of implement travel, said plate being normally positioned to ride along the ground during travel and being freely displaceable upwardly and downwardly about said pivot connections responsive to ground undulations without tilting, said pivot connections defining substantially horizontal axes that extend transverse to the direction of travel, an elongated roller being positioned to the rear of said soil working members, the lateral ends of said roller being pivoted to the supporting structure by corresponding arms, said plate having an obliquely bent-over upper portion that is substantially vertically in register with a respective arm to avoid fouling the arm.

4,354,558

APPARATUS AND METHOD FOR DRILLING INTO THE SIDEWALL OF A DRILL HOLE

Alfred E. Jageler; Robert A. Broding, and Lauren G. Kilmer, all of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 25, 1979, Ser. No. 51,485
Int. Cl.³ E21B *49/06*
U.S. Cl. 175—45 **41 Claims**



1. An apparatus for drilling into the sidewall of a drill hole which comprises:

a support member,

a shoe means mounted to said support member for movement toward and away from the sidewall of a drill hole,

a hydraulic motor means mounted to said support member for movement along track means toward and away from the sidewall of a drill hole, wherein said motor means comprises a rotor,

a downhole hydraulic power source remotely actuatable for radially driving said rotor,

downhole power means independent of said hydraulic motor means for moving said motor means along said track means, and

a drilling bit means connected to said rotor for drilling a hole.

4,354,559

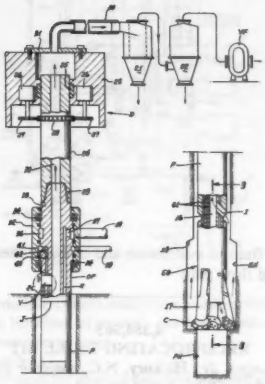
ENLARGED BOREHOLE DRILLING METHOD AND APPARATUS

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Filed Jul. 30, 1980, Ser. No. 173,836
Int. Cl.³ E21B *7/28, 17/18, 21/12*
U.S. Cl. 175—71 **21 Claims**

1. The method of drilling a bore hole in earth formation comprising: drilling the bore hole into earth formation by rotating a bit on a dual pipe having an outer fluid path defined between inner and outer pipes and a suction inlet leading from the bore hole to the interior of the inner pipe above the bit, while circulating air through the bit from said outer fluid path, and applying a vacuum to the interior of said inner pipe, to remove cuttings from the bore hole through said suction inlet, and including halting the circulation of air, removing the pipe from the bore hole replacing the bit with a bore hole enlarging bit having cutters expansible to a gauge in excess of the gauge of the bore hole, moving the bore hole enlarging bit on the pipe to a selected location in the bore hole, expanding the cutters of said expansible bit while circulating air through said outer fluid path and through said bore hole enlarging bit, and applying a vacuum to the interior of said inner pipe while rotating said pipe to enlarge the bore hole to a selected location, retracting said cutters, and removing the pipe and bore hole enlarging bit from the bore hole.

9. Apparatus for enlarging a bore hole drilled into an earth



formation comprising: a rotatable dual drill pipe string having an inner pipe and an outer pipe defining an inner fluid path and an outer fluid path between the pipes; a bit having normally retracted expansible cutters connected to said drill pipe string; fluid pressure actuated means for expanding the cutters of said bit; passage means in said bit communicating said outer fluid path with said bore hole; a suction inlet communicating between said inner fluid path and said bore hole; means for connecting said outer fluid path to a fluid source while permitting rotation of said drill pipe string; and means for connecting said inner pipe and inner fluid path to a vacuum inducer to induce fluid flow from said bore hole through said suction inlet.

4,354,560

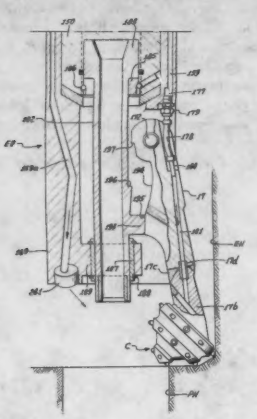
APPARATUS FOR DRILLING ENLARGED BOREHOLES

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Division of Ser. No. 173,836, Jul. 30, 1980. This application Oct. 26, 1981, Ser. No. 315,184
Int. Cl.³ E21B *10/18, 10/34*
U.S. Cl. 175—267 **6 Claims**

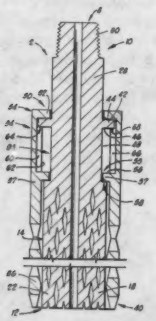
1. A rotary bore hole enlarging bit adapted for connection with a rotary pipe string having a drilling fluid flow path and an acutator fluid flow path, said bit comprising: a body structure including inner and outer telescopic body sections; expansible and retractible cutter arms on said outer body section; expander means on said inner body section engageable with said cutters to expand the cutters upon telescopic movement of said body sections in one relative direction; piston and cylinder means defined between said inner and outer bodies to effect telescopic movement of said body sections; first passage means in said body structure and expansible cutters for conducting

drilling fluid to said cutters from said drilling fluid flow path; and second passage means in said body structure for conduct-



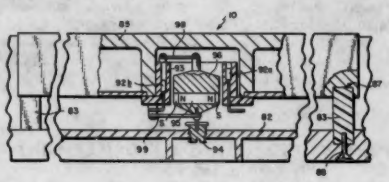
ing actuator fluid to said piston and cylinder means from said actuator fluid flow path.

4,354,561
RECIPROCATING DRILL BIT
Clifford K. Logan, Jr., Hickory, N.C., assignor to Bell Charles Haney, Yukon, Okla., a part interest
Filed Aug. 21, 1980, Ser. No. 180,129
Int. Cl.³ E21B 4/08
U.S. Cl. 175—321 **12 Claims**



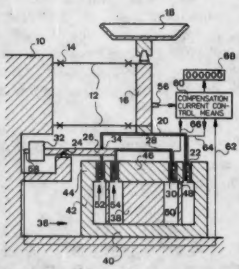
1. A drill bit, comprising:
a coupling member for coupling said drill bit to a drill bit drive means;
a cutter member for drilling into a workpiece; and
means for reciprocatingly connecting said cutter member to said coupling member, said means including:
a first flange associated with said coupling member and extending toward said cutter member; and
a second flange associated with said cutter member and extending toward said coupling member for overlying engagement with said first flange so that said first flange delimits the downward travel of said cutter member during reciprocation of said cutter member with respect to said coupling member; and
cushioning means, disposed between said first flange and said second flange, for damping the reciprocating interaction between said coupling member and said cutter member during relative movement therebetween.

4,354,562
ELECTRONIC WEIGHING DEVICE
Martin H. Newman, 82 Talbot Way, Seekonk, Mass. 02771
Filed Dec. 3, 1980, Ser. No. 212,357
Int. Cl.³ G01G 3/14
U.S. Cl. 177—210 EM **9 Claims**



1. An electronic weighing device comprising:
a weighing surface for receiving an object to be weighed, so that when the object is placed on said weighing surface, the surface is displaced in response to the weight of the object acting on it;
sensing means for sensing the displacement of said weighing surface and providing an electrical output signal that is proportional to the distance moved;
display means for displaying the weight of said object; and
circuit means for converting the output signal of said sensing means to a form suitable for operating said display means;
wherein said sensing means comprises a linear Hall effect device and its associated magnetic field.

4,354,563
ELECTROMAGNETIC WEIGHING APPARATUS HAVING MULTIPLE AIR GAPS
Paul Lüchinger, Uster, and Andreas Stutz, Aathal, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland
Filed Apr. 13, 1981, Ser. No. 253,275
Claims priority, application Switzerland, Jun. 6, 1980, 4368/80
Int. Cl.³ G01G 7/00, 3/14
U.S. Cl. 177—212 **7 Claims**



1. In a weighing apparatus of the electromagnetic load compensation return-to-zero type including a frame (10); a load-receiving member (16) movably connected with, and normally having an initial no-load position, with respect to, said frame; means (38, 72) connected with said frame for establishing a stationary constant magnetic field; load-mechanic means including a load coil (22), and first means (20) connecting said load coil with said load-receiving member for movement in said field; reference means including a reference coil (30), and second means (26) connecting said reference coil with said frame for movement from a normal reference position within said field; load signal generating means (56) for generating a load signal that is a function of the extent of displacement of

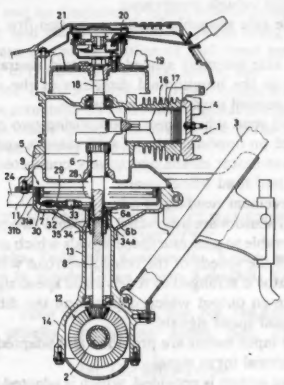
said load-receiving member from its initial no-load position; reference signal generating means (58) for generating a reference signal that is a function of the displacement of the reference coil from its reference position; and control circuit means (60) responsive to said load and reference signals for supplying load and reference compensation currents (64, 66) to said load and reference coils to displace the same toward their initial no-load and reference positions, respectively, said control circuit means also producing as a function of said load and reference compensation currents a weight indicating signal that is a function of the load applied to said load-receiving member;

the improvement wherein said magnetic field establishing means includes divider means (48, 48') dividing said magnetic field into a pair of separate air gaps (52, 54), said load and said reference coils being arranged in said air gaps, respectively.

4,354,564
CULTIVATOR HAVING A VERTICALLY OPERATED ENGINE

Yoshimi Watanabe, Wako; Gunji Saito, Tokyo; Masaharu Omagari, Niiza, and Kenji Nakamura, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,599
Claims priority, application Japan, Aug. 2, 1979, 54-106142; Aug. 9, 1979, 54-108935; Aug. 9, 1979, 54-108936; Aug. 9, 1979, 54-108937
Int. Cl.³ B62D 51/06
U.S. Cl. 180—19 H 8 Claims

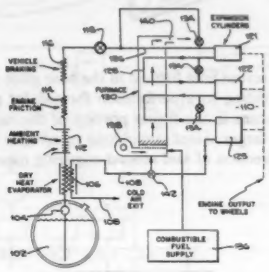


1. A cultivator of the type employing a vertical engine that comprises an internal combustion engine on its upper side, a wheel shaft on a lower side and an operation handle on a rear side, wherein: the engine is defined by an engine main body provided with a vertically directional crankshaft extending downwards through an oil case thereof, a frame casing on the lower side of the oil case, a clutch mechanism interposed between the crankshaft and an output shaft disposed below the crankshaft contained in the frame casing, and an operational member for the clutch mechanism provided on the oil case side the clutch mechanism comprising a sun gear provided on the crankshaft, at least one star gear provided on the periphery of the sun gear and in mesh therewith, an internal gear provided on the periphery of the star gear and in mesh therewith, and the internal gear being so arranged as to be braked by a brake member, said brake member being arranged to be moved by the operational member.

4,354,565
ENGINE SYSTEM USING LIQUID AIR AND COMBUSTIBLE FUEL

Albert L. Latter, Marina del Rey; R. Philip Hammond, and James L. Dooley, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Continuation-in-part of Ser. No. 958,056, Nov. 6, 1978, Pat. No. 4,226,294. This application Sep. 10, 1979, Ser. No. 73,894
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.
Int. Cl.³ B60K 3/02; F01K 25/06
U.S. Cl. 180—54 B 10 Claims



1. An automobile system utilizing a combinational engine for operating on liquified cryogenic gas and combustible fuel as energy sources comprising:

an automobile;

an insulated tank for storing liquified cryogenic gas mounted in said automobile;

means for pumping said liquified gas to an elevated pressure above 100 bars;

first heat exchanger means for warming said high pressure liquified gas toward the ambient whereby it changes to the gaseous state;

second heat exchanger means located in the said automobile to receive heat from the ambient air and further warm the pressurized gas, as said automobile moves forward;

means for storing combustible fuel in said vehicle;

means for burning said fuel to heat the pressurized gas;

multi-stage expansion engine means for receiving said pressurized gas, permitting it to expand, and obtaining useful work therefrom;

said fuel burning means being an external combustion furnace;

means for supplying heat from said furnace to said pressurized gas before application to said expansion engine and between stages thereof; and

temperature control valve means for directing at least a portion of the pressurized gas through a bypass path to avoid additional heating by said fuel burning means as said pressurized gas is directed to said expansion engine means, to avoid overheating said multistage expansion engine components.

4,354,566
RADIATOR GRILLE FIXING STRUCTURE

Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

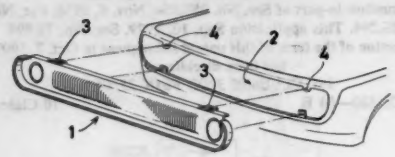
Filed Sep. 8, 1980, Ser. No. 184,872
Claims priority, application Japan, Sep. 6, 1979, 54-122433[U]
Int. Cl.³ B60R 19/00
U.S. Cl. 180—68 P 3 Claims

1. A structure for fixing a radiator grille to an automobile body, which comprises:

a base plate,

a first engaging means provided on one surface of the base plate and adapted to come into engagement with a fitting hole formed on a fitting portion of an automobile body,

a second engaging means provided on the other surface of the base plate, possessed of a width smaller than the width of a fitting hole formed on a fitting portion of a radiator grille and adapted to come into engagement with said fitting hole of the radiator grille, and



an oblong screw hole formed in the base plate at a position corresponding to a perforation formed for passage of a screw means in the fitting portion of the radiator grille, with the larger axis of said oblong screw hole falling in the width direction of said second engaging means.

4,354,567

REAR AXLE SUSPENSION SYSTEM FOR MOTOR VEHICLES

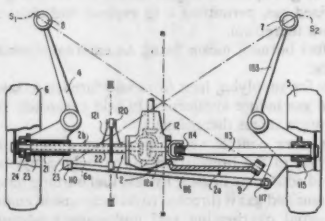
Christian Puchas, Schwieberdingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,068

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932670

Int. Cl.³ B60K *17/18*; B60G *3/08*

U.S. Cl. 180—73 C **22 Claims**



2. A suspension arrangement for suspending driven wheels of a motor vehicle, the arrangement comprising a first and second tilted control arm means for respectively carrying the driven wheels, each control arm means including a longitudinal control arm and a transverse control arm, characterized in that the first control arm means supports an axle gear means, a jointless shaft means is provided for operatively drivingly connecting the axle gear means to the wheel carried by said first control arm means, a jointed shaft means is provided for connecting the axle gear means to the wheel carried by the second control arm means, the transverse control arm of the first control arm means includes at least two sections interposed between the axle gear means and the longitudinal control arm of the first control arm means, and in that said at least two sections are mounted so as to be mutually rotatable.

4,354,568

ELECTRICALLY CONTROLLED TRAVEL DRIVE CONTROL SYSTEM FOR STEERABLE VEHICLES, PARTICULARLY FORK LIFT TRUCKS

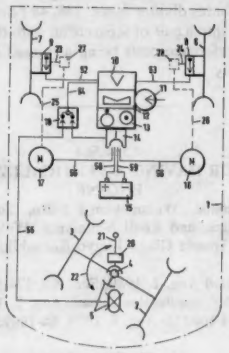
Karl-Heinz Griesenbrock, Stuvenborn, Fed. Rep. of Germany, assignor to Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,910

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909667

Int. Cl.³ B62D *11/04*

U.S. Cl. 180—197 **18 Claims**



1. In an electrically controlled travel drive control system for a steerable vehicle comprising

a steerable axle assembly having swivelled first road wheel means,

a second axle assembly spaced from said steerable axle assembly in the longitudinal direction of the vehicle and having second road wheel means,

one of said road wheel means comprising two road wheels disposed on opposite sides of said vehicle, and

travel drive motor means operatively connected to at least one of said road wheel means,

the improvement residing in that

two speed sensors are associated with said two road wheels and operable to generate speed signals which are representative of the speeds of the respective road wheels,

a comparator is arranged to receive said speed signals and to generate an output which depends on the difference between said speed signals,

additional input means are provided and adapted to receive an additional input signal,

a switching system is provided, which is adapted to generate a travel drive control signal for controlling said travel drive motor means in dependence on the difference between said speed signals and on said additional input signal,

said steerable axle assembly comprises an angularly movable bogie and two road wheels mounted in said bogie and disposed on opposite sides of said vehicle,

said travel drive motor means comprise two travel drive motors,

one of said road wheel means comprises two road wheels disposed on opposite sides of said vehicle and operatively connected to respective ones of said travel drive motors,

a proximity sensor is associated with said steerable axle assembly and adapted to deliver an output signal which depends on the angular position of said bogie, and

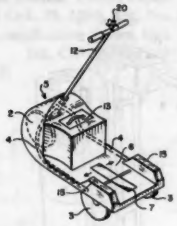
said switching system is adapted to control said travel drive motors in dependence on the output signal of said proximity sensor.

4,354,569

ELECTRIC VEHICLE

Heinz Eichholz, Kolpingstrasse, 4441 Schapen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,843
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915387
Int. Cl.³ B62D 61/08; B60K 26/02
U.S. Cl. 180—211 4 Claims



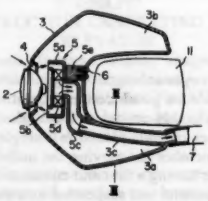
1. An electric vehicle comprising:
an electric motor;
a chassis having a pair of rear wheels, a steerable front wheel driven by said motor, a tread board disposed between the wheels, configured to be stood upon by a standing user or driver and means mounting a portion of said tread board to form a rocking pedal; and
a vehicle control means including a speed control element connected to said motor to control the speed thereof;
said speed control element comprising a front portion of said pedal and an electronic control system connected to said motor said electronic control system being operable, in response to the depression of said front portion of said pedal, to control said electric motor; and
said speed control element further comprising a pair of brakes actuatable by said rocking pedal to engage said rear wheels under spring bias in response to the depression of a rear portion of said pedal.

4,354,570

ARRANGEMENT OF AIR CLEANER FOR A MOTORCYCLE

Norio Tanaka, Toda, and Kentaro Ito, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,610
Claims priority, application Japan, Sep. 21, 1979, 54-131795[U]
Int. Cl.³ B62J 17/00
U.S. Cl. 180—219 2 Claims



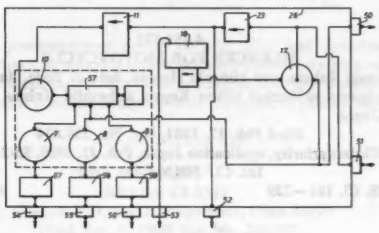
1. An arrangement of air cleaner for a motorcycle, wherein said air cleaner is disposed in an internal space of a hollow fairing of said motorcycle, and is communicatively connected with a carburetor of an engine of said motorcycle through a conduit pipe, characterized in that said air cleaner disposed in the internal space of said hollow fairing of said motorcycle is in confrontation to an air passage opening defined in said fairing surrounding a head light of said motorcycle.

4,354,571

PROTECTIVE SYSTEM FOR USE IN TRANSFER OF HAZARDOUS SUBSTANCES

John Lakin, Verwood, and Philip R. Watson, Sundbury-on-Thames, both of England, assignors to Moorwats Safety Systems Limited, Middlesex, England

Filed Feb. 4, 1981, Ser. No. 231,582
Int. Cl.³ F16K 11/20; B60P 9/00
U.S. Cl. 180—271 8 Claims



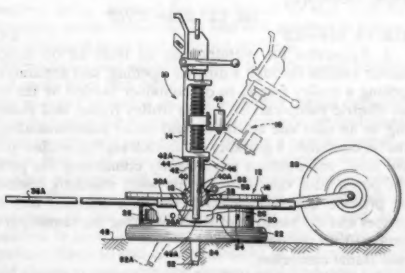
1. A control system for the product outlet valves of a storage tank, the system comprising one or more pneumatically operated valves associated with the or each product outlet of the storage tank, a control valve connected to an air reservoir through a charge valve for effecting operation of the pneumatic outlet valves, the charge valve being of a single shot type for pressurising a manifold connected to the product outlet valve or valves, the manifold being associated with one or more emergency release valves and a further solenoid operated valve operatively connected with a gas detector means, detection of escaping product vapour by the gas detector or actuation of the emergency release valve effecting discharge of pressure in the manifold by venting to close the product outlet valves by release of said pressure, the control valves thereafter being inoperative until the charge valve is actuated to re-pressurise the manifold.

4,354,572

PORTABLE SEISMIC ENERGY SOURCE

Philip N. Martin, Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 963,982, Nov. 27, 1978, Pat. No. 4,223,759. This application May 5, 1980, Ser. No. 146,786
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ G01V 1/104
U.S. Cl. 181—116 3 Claims



1. An improved portable seismic energy source comprising:

a base having an upper plate and a lower circumferential ground seal means, the plate having an opening therethrough;

a socket member mounted in said opening in said plate, the interior surface of said socket member being defined by a double truncated sphere;

a ball member having an opening therethrough, said ball member being rotatably received within said socket member;

a gun secured to said ball member having the barrel thereof in alignment with said ball member opening, the gun being thereby supported such that the angle of the gun barrel relative to the surface of the earth may be selected whereby a projectile fired by said gun passes through said ball member to strike the earth's surface beneath said base.

4,354,573

SILENCER FOR MOTORCYCLE

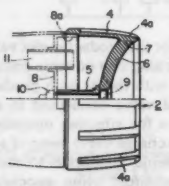
Kazuki Tabata, and Hideaki Honma, both of Toda, Japan, assignors to Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,634

Claims priority, application Japan, Feb. 21, 1980, 55-21826[U]

Int. Cl.³ F01N *7/00, 1/08*

U.S. Cl. 181—239 **6 Claims**



1. In a tail cap of a silencer for a motorcycle comprising an outer cylindrical member having a diameter to fit on and around one end of an exhaust pipe, an inner cylindrical member concentrically positioned in said outer cylindrical member, and a spacer to maintain said outer and inner cylindrical members at an equal distance for their concentricity, the improvement comprising a multiplicity of spacers radially extending from said inner cylinder toward the inner surface of said outer cylinder in an arcuate shape in longitudinal cross-section to define, by and between adjacent spacers, openings constituting the exhaust gas outlet.

4,354,574

OIL SUCTION APPARATUS

Lothar Kieber, Mülheim, Fed. Rep. of Germany, assignor to Deutsche Calypsolgesellschaft mbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,611

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 7904993[U]

Int. Cl.³ F16N *37/00*

U.S. Cl. 184—1.5 **2 Claims**

2. Apparatus for withdrawing oil from an oil sump of a motor vehicle through a dipstick opening, said apparatus comprising a trolley frame, an oil container carried by the trolley, an electric pump carried by the trolley frame, said pump having an an inlet and an outlet, said outlet communicating with the oil container, a plurality of dipstick suction probes of different sizes, valve means permanently connecting the probes to the pump inlet, said valve means being manually controllable to provide communication between a selected one of the probes and the pump inlet while isolating the remainder of the probes from the pump inlet,

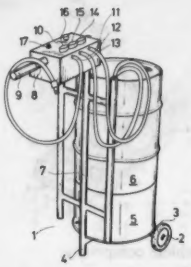
said frame comprises,

a vertically extending leg forming a tube at its upper end, a holding arm extending horizontally from and connected to said tube at the uper end thereof forming an L-shape therewith, a handle is connected to free end of said holding arm,

an axle having wheels on opposite ends thereof,

a bottom cross-member connected to a lower portion of said leg and centrally to said axle, said leg and said wheels form a three-point support,

two vertical side members disposed on lateral sides of said tube extending parallel thereto and connected therewith, said side members have bottoms disposed higher than the



lower portion of said leg and defining open upper ends disposed lower than said upper end of said tube, said suction probes being adapted to be inserted in said open upper ends,

a control box containing said pump and valve means is inserted on said holding arm adjacent said tube and removably secured to said handle,

said battery case being supported on said front axle and said cross member, said oil container being supported on said battery case, said oil container and said battery case being cylindrical with substantially the same diameter.

4,354,575

GOODS CONVEYOR TRACK

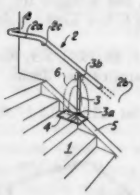
Curt E. Andersson, Katrineholm, Sweden, assignor to Kurt Göran Andersson, Sweden

Filed Apr. 21, 1980, Ser. No. 141,924

Claims priority, application Sweden, Apr. 25, 1979, 7903604

Int. Cl.³ B66B *9/06*

U.S. Cl. 187—12 **16 Claims**



1. A goods conveyor arranged along a staircase, comprising a supporting surface for goods connected with a conveyor unit forming part of a goods conveyor track, the conveyor track including a number of units placed in a single tubular shaped guide, a driving member for moving the units in the guide, an elongated member having a first end connected to the supporting surface and a second end suspended downwardly from one of said units, a displacement of the units in the guide causing a displacement of the supporting surface, the guide being oriented along the staircase with no portion of the supporting surface or the elongated member extending above said guide such that the guide is operable as a handrail for the staircase, a longitudinal slit in the guide facing downwards and receiving the second end of said elongated member, the first end of said

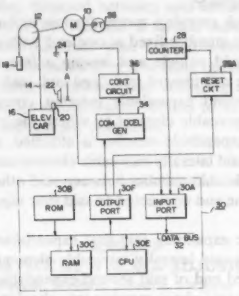
elongated member has a wheel for rolling engagement with a track oriented on a wall adjacent the staircase, said elongated member lying in a vertical plane bounded by the guide and the track, said track supporting a substantial portion of the weight of said goods conveyor.

4,354,576

COMMAND SPEED GENERATOR SYSTEM FOR ELEVATOR CAR

Ryuichi Kajiyama, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 202,180
Claims priority, application Japan, Oct. 30, 1979, 54-140090
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **2 Claims**



1. A command speed generator system for an elevator car comprising: a counter means for counting pulses corresponding to a distance of movement of said elevator car; an electronic computer means which is independent of said counter means and contains a central processing unit, wherein a count from said counter means is entered into said computer means upon said elevator car reaching a predetermined distance short of a floor on which said elevator car is predetermined to stop and for each of predetermined calculating time periods thereof, and wherein said electronic computer subtracts said entered count from said predetermined distance so as to calculate a residual distance corresponding to the distance between the actual position of said elevator car and said predetermined floor; a signal generator means connected to said electronic computer for delivering a command deceleration signal representative of said residual distance; and a resetting circuit means connected to said counter means and independent of said central processing unit for generating a pulse for resetting said counter means to zero in response to said elevator car reaching said predetermined distance.

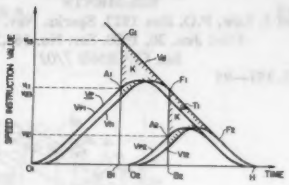
4,354,577

SPEED INSTRUCTION GENERATING DEVICE FOR ELEVATOR

Masashi Yonemoto, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,239
Claims priority, application Japan, Jun. 18, 1980, 55/82363
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **8 Claims**

1. A method for controlling the movement of an elevator, comprising the steps of: moving an elevator cage at a speed determined by a first speed instruction value toward a floor at which said cage is to be stopped; determining a distance remaining from a present position of said cage to said floor at which said cage is to be stopped; adding a predetermined distance to said remaining distance; determining a second speed instruction value in accordance with the sum of said predetermined distance and said remaining distance; determining a difference between said second speed instruction value and said first speed instruction value; issuing a switching preparation instruction when said difference becomes smaller than a predetermined value; and moving said elevator cage at a speed determined in accordance with said second speed instruction



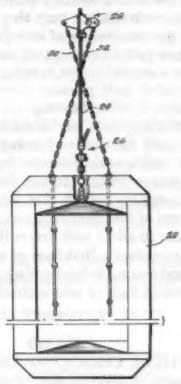
value a predetermined period of time after said switching preparation instruction is issued, wherein a difference between said first speed instruction value and said second speed instruction value is constant irrespective of the speed of said elevator cage.

4,354,578

READY CLAMP

Glenn E. Gray, R.F.D. No. 2, Tippecanoe, Ohio 44699

Filed Nov. 5, 1980, Ser. No. 204,267
Int. Cl.³ B66B *5/00*
U.S. Cl. 187—71 **10 Claims**



1. A clamp adapted to be mounted on a cable above a load normally supported by the cable for supporting the load from the cable in the event of failure of the cable supporting the load between the clamp and load comprising:

first and second members having opposed surfaces defining therebetween an extending passage for said cable, said first member being adapted for attachment to said load by attaching means connected to said first member at a location separated from said opposed surfaces;

means mounting said second member for movement toward and away from said cable;

a cam member mounted on said mounting means outward from said cable for pivotable movement in a vertical plane about an axis, said cam member having a cam surface at a radius from said axis which radius increases, said cam member engaging said second member and defining means remote from said axis for attaching said cam member to said load so that failure of said cable causes said cam member to pivot about said axis so that said cam surface applies a force to said second member to frictionally lock said clamp to said cable and support said load, said clamp being coupled to the cable in a non-fixed manner so that

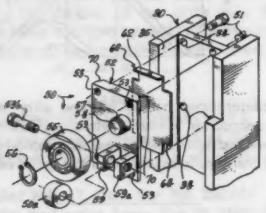
the clamp only applies a clamping force and is fixed coupled to the cable upon failure of the cable.

4,354,579

APPARATUS FOR GUIDING LIFT TRUCK MAST SEGMENTS

Leonard J. Low, P.O. Box 1927, Sparks, Nev. 89431

Filed Jun. 30, 1980, Ser. No. 164,248
Int. Cl.³ B66B 7/02
U.S. Cl. 187—95 **1 Claim**



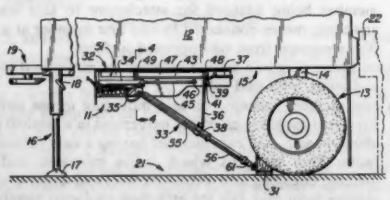
1. An apparatus for guiding lift truck mast segments comprising: a first lift truck mast segment, having a removable roller bearing assembly means mounted thereon, said roller bearing assembly means comprising a flat mounting plate secured to said first lift truck mast segment; a projecting stub shaft mounted on said mounting plate; a first roller bearing mounted on said stub shaft; a snap ring placed in a groove on said stub shaft for retainment of said first roller bearing onto said stub shaft; a pair of projecting ears secured to said flat mounting plate; a second roller bearing mounted between said ears by a threaded bolt passing through one of said ears, through said second roller bearing, and into a threaded opening in the other of said ears; said second roller bearing being at right angles to said first roller bearing; a second mast frame segment placed inside said first mast frame segment and being guided for relative movement to said first mast segment by said roller bearing assembly means; and wherein one of the structural end portions of said first lift truck mast frame segments is cut away in order to allow said first roller bearing to be placed into position to contact a first face of said second mast frame segment, and said second roller bearing is placed into a position to contact a second face of said second mast frame segment.

4,354,580

WHEEL CHOCKING ASSEMBLY

Clifford J. Delasantos, 4380 Benito, Montclair, Calif. 91763, and Peter J. Rasmussen, 10714 Western Ave., Downey, Calif. 90241

Filed Dec. 18, 1979, Ser. No. 104,874
Int. Cl.³ B60T 1/00, 3/00
U.S. Cl. 188—4 R **9 Claims**



1. A wheel chocking means for a wheeled vehicle having a frame and at least one set of wheels supporting said frame and engaging a roadway surface, comprising:

(a) a chock member;

(b) a collapsable and expandable carrying means for said chock mounted to the underside of said vehicle in a position so as to be parallel to the frame of said vehicle when in the collapsed position and diagonally between the frame of said vehicle and at least one wheel of said vehicle and the roadway surface when in expanded chocking position;

(c) said chock carrying means including a first expandable member having a pivoted end fixed to a laterally moveable element moveable attached to said frame of said vehicle and a free end moveable away from and toward said pivoted end, a flexible member connected at one end to said first expandable member at a point spaced from said pivoted end and connected at its other end to another portion of said frame of said vehicle, said free end of said first expandable member having said chock member attached thereto for engagement with said wheel and said roadway surface;

(d) said chock carrying means further including a second expandable member fixed at one end with respect to said frame of said vehicle and having a free end moveable away from and toward said fixed end, said moveable end of said second expandable member connected to said laterally moveable element to which the pivoted end of said first expandable member is attached, and means attached to said laterally moveable element and cooperating with said flexible member between said other end thereof and said one end connected to said first expandable member;

(e) means for expanding said first expandable member and for moving said laterally moveable element with respect to said fixed end of said second expandable member and for moving said chock member into chocking engagement with said wheel; and

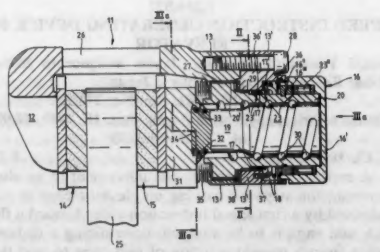
(f) control means for collapsing said first expandable member away from said chocking engagement and then for collapsing said second expandable member to move said laterally moveable element toward the fixed end of said second expandable member and for moving said means cooperating with said flexible member toward the end connected to said first expandable member.

4,354,581

MECHANICAL ACTUATING DEVICE FOR A DISC BRAKE

Alfred Birkenbach, Hattersheim, and Helmut Franke, Wehrheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,883
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946850
Int. Cl.³ F16D 65/56
U.S. Cl. 188—71.9 **14 Claims**



1. A mechanical actuating device for a spot-type disc brake comprising:

a brake caliper embracing a brake disc, said caliper including an axial bore in a leg thereof, said axial bore having a

longitudinal axis parallel to an axis of rotation of said brake disc;

an actuating spindle disposed in said axial bore coaxial of said longitudinal axis acting against a given brake shoe of said disc brake, said spindle being secured against rotation relative to said given brake shoe;

an actuating nut disposed in said axial bore coaxial of said longitudinal axis and surrounding said spindle, said nut being axial immovable and rotatable relative to said spindle;

an actuating means disposed coaxial of said longitudinal axis and surrounding said nut in a rotational driving relationship therewith; and

an adjusting device for an automatic adjustment to maintain a nominal clearance between said given brake shoe and said brake disc after a braking operation, said adjusting device being disposed between said actuating means and said nut such that said nut is turned back a correspondingly smaller distance than normal when said nominal clearance is exceeded after a braking operation enabling a relative rotation between said actuating means and said nut as said actuating means returns to its initial position prior to said braking operation.

4,354,582

DEVICE AT A SLACK ADJUSTER

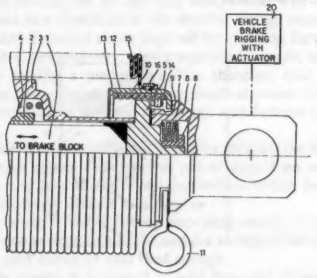
Lars M. Severinsson, Hishult, Sweden, assignor to SAB Industri AB, Landskrona, Sweden

Filed Jan. 23, 1980, Ser. No. 114,659

Claims priority, application Sweden, Jan. 29, 1979, 7900739

Int. Cl.³ F16D *65/042*

U.S. Cl. 188—196 M **5 Claims**



1. A manual adjustment device for increasing slack in an automatic slack decreasing slack adjuster such as required to install new brake blocks, the adjuster having a rotatable part which turns in one direction to adjust the slack and in an opposite direction in response to said device to increase the slack, comprising in combination, first clutch means in said adjuster holding said rotatable part in frictional engagement with a non-rotatable part for holding the rotatable part non-rotatable in the slack increasing direction and means for manually overcoming said frictional engagement to rotate said rotatable part relative to said holding part in the direction increasing slack including a manually accessible second rotatable member and a one way clutch coupling said second rotatable member to said rotatable part to rotate it when the second rotatable member is rotated in the slack increasing direction with a force overcoming the force of said frictional engagement whereby the second rotatable member may be moved back and forth over a small arc to effect an increase in slack.

4,354,583

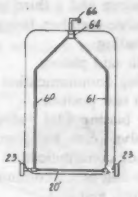
CARRIER FOR GARMENT BAGS AND THE LIKE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Aug. 17, 1981, Ser. No. 293,364

Int. Cl.³ A45C *5/14*

U.S. Cl. 190—18 A **2 Claims**



1. In combination with a generally rectangular elongated garment carry-on bag, a carrier for said bag comprising:

a wheeled support positioned at the bottom end of said bag, said support including a horizontally extending axle positioned within said bag and extending through the opposite vertically extending side edges of said bag,

a vertically extending elongated member positioned within said bag and connected at its lower end to said axle and extending at its upper end through the upper end of said bag,

a second vertically extending elongated member connected to said axle with said two members being adjacent the vertically extending side edges of said bag and connected together adjacent said upper end of said bag.

4,354,584

TRANSMISSION-CLUTCH OPERATING SYSTEM

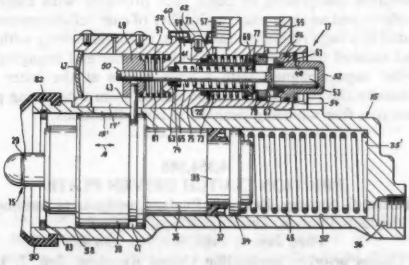
Günther Reifinger, Germering; Christian Fuchs, Oberschliessheim; Alfred Magg, Friedrichshafen, and Gerold Bieber, Langenargen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen A.G., Friedrichshafen and Knorr-Bremse GmbH, Munich, both of, Fed. Rep. of Germany, a part interest to each

Filed Oct. 30, 1979, Ser. No. 80,508

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842736

Int. Cl.³ F16D *25/00, 13/75*

U.S. Cl. 192—3.57 **5 Claims**



1. A transmission system comprising:

a driven shaft connected to a motor;

a transmission having an input and an output shaft, the output shaft being connectable to a load, said transmission being shiftable to vary the transmission ratio between said input and output shafts in dependence upon application of fluid pressure to a fluid input;

a clutch between said driven shaft and said input shaft;

a clutch-operating cylinder having a piston operatively

connected to said clutch for opening same upon displacement of said piston; and

a supply valve connecting a source of fluid under pressure with said input and including a valve member entrained by said piston for controlling the pressurization at said input with said fluid to permit ratio shifting of said transmission only upon opening of said clutch, said supply valve having a first port connected to said input, a second port connected to said source and a third port for relieving fluid pressure, said valve member being shiftable in a valve housing and including:

a slide coupled with said piston;

a valve plate blocking communication between said first and second ports in a rest position;

first spring means biasing said valve plate into said rest position, said valve plate being engaged by said valve member to unblock communication between said first and said second ports and block communication between said first and third ports; and

a transverse pin connecting said piston and said slide.

4,354,585

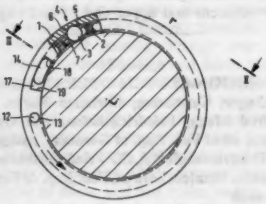
OVERRUNNING CLUTCH SHIFTABLE TO FREE WHEELING

Joachim Ritter, Herzogenaurach, Fed. Rep. of Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,175

Int. Cl.³ F16D *15/00, 41/06*

U.S. Cl. 192—45 **3 Claims**



1. An overrunning clutch capable of being shifted to free wheeling in both directions and capable of being shifted to a camming position in one direction or free wheeling in opposite direction comprising an outer race provided with camming surfaces and an inner race, a plurality of cam rollers accommodated in a cage rolling on said races, a circular spring with one end secured to the outer race and the other end engaging the roller cage designed with a shift means at the latter end whereby the roller cage can be shifted from a camming position to a free wheeling position in both directions.

4,354,586

FRICTION CLUTCH DRIVEN PLATE

Michael G. Stanley, Banbury, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Jun. 5, 1980, Ser. No. 156,802

Claims priority, application United Kingdom, Jun. 7, 1979, 7919794

Int. Cl.³ F16D *3/66*

U.S. Cl. 192—106.2 **4 Claims**

1. A friction clutch driven plate having;

a hub with a circumferential flange thereon;

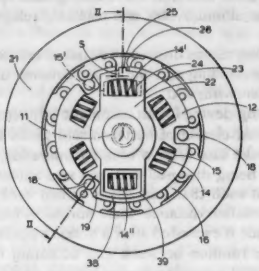
a circumferentially extending slot defined in the outer peripheral edge of the flange;

a friction facing carrier mounted on the hub and capable of limited angular movement about the hub;

springs acting between the flange and the carrier to restrain said angular movement;

and friction damping means which includes;

a control plate located axially between the flange and the facing carrier and which is capable of angular movement relative to the carrier to render said friction damping means effective, said control plate having a substantially radial outwardly projecting arm with an aperture defined



therein which snugly accommodates one of said springs, and said arm has at its radially outer peripheral edge an axially directed lug that engages said slot and has circumferential clearance therein to allow for an initial sector of angular movement of the carrier relative to the hub before the damping means is rendered effective.

4,354,587

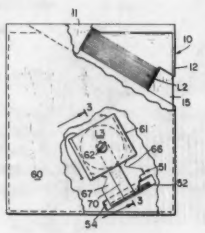
COIN ACCEPTOR OR REJECTOR

Ronald C. Davies, Las Vegas, Nev., assignor to Third Wave Electronics Company, Inc., Las Vegas, Nev.

Filed Oct. 17, 1980, Ser. No. 198,283

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A **17 Claims**



1. A coin acceptor or rejector apparatus for use in coin-operated machines and the like, comprising a coin chute having a slot for receiving a coin, said chute having a coin acceptance portion and a coin rejection portion, a flapper controlling the direction of movement of coins to one or the other of said portions, an oscillator circuit adapted to oscillate at a substantially constant amplitude, a sensing coil surrounding the chute at its upper end adjacent said slot and actuated by a coin passing therethrough, said sensing coil upon receipt of a coin having its Q substantially decreased and having energy losses caused by eddy currents being dissipated by the coin and by the magnetic hysteresis of the coin whereby the effective resistance of the oscillator circuit is reduced and the current flow therethrough is increased, comparative circuitry for discriminating the change in current and resulting voltage within predetermined limits, and a solenoid energized by the change in resulting voltage within the limit prescribed for a genuine coin which moves the flapper to coin acceptance position.

4,354,588

DEVICE ON AN ATTACHMENT MACHINE

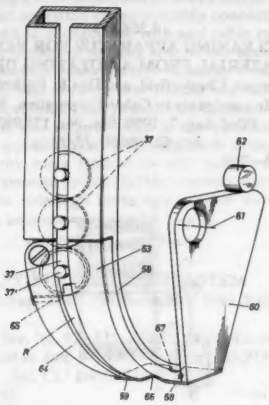
Günter Wolfertz, Schützenstrasse, Fed. Rep. of Germany, assignor to Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 108,262

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856868

Int. Cl.³ B65G 47/24

U.S. Cl. 198—394 13 Claims



1. A device for transportation and correct angular positioning of fasteners such as buttons, rivets or the like in the tool of an attachment machine which has a trough-shaped guide rail defining a feed trough for the fasteners provided with an indexing stop, which is arranged in front of the tool, the rail having a friction lining over at least part of the length of one side thereof and having, on its opposite side, a side wall which is spring-biased in a direction of the friction lining, comprising

slide means disposed along said rail for pushing forward the fasteners, respectively, along said feed trough, said slide means having a pushing surface therefor, said pushing surface being disposed on a longitudinal center line of the feed trough and adapted to engage said fasteners, respectively,

stop means for contacting the indexing stop on the fasteners, said stop means comprises a pin arranged on said slide means and laterally of said longitudinal center line,

said feed trough defines a curve,

a swing lever being pivotally mounted about a stationary pivot axis and having a free end for swinging substantially along said curve of said feed trough,

said slide means is arranged at said free end of said swing lever so as to swing substantially along said curve of said feed trough and is adapted to get behind said fasteners for pushing the latter by said pushing surface,

said pushing surface of said slide means is formed as an abutment surface.

4,354,589

METHOD AND APPARATUS FOR GROUPING FLAT ITEMS IN STACKS

Rene Fluck, Schleitheim, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,329

Claims priority, application Switzerland, Nov. 23, 1979, 10463/79

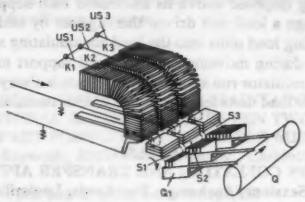
Int. Cl.³ B65G 59/06

U.S. Cl. 198—419 7 Claims

1. In a method of grouping flat items in stacks, including the steps of advancing the items on at least three parallel channels to a grouping device; cyclically transferring a predetermined number of items from each channel to said grouping device; and forming mixed groups by the grouping device such that each mixed group contains at least one item from each said channel; the improvement comprising the following steps:

(a) monitoring each channel for determining an undersupply of items therein;

(b) upon determination of an undersupply in a channel and for a duration following said determination, transferring from the undersupplied channel to said grouping device a number of items which is reduced by a first quantity as



compared with the quantities transferred from the undersupplied channel when there is a normal supply of articles therein; and

(c) upon determination of an undersupply in a channel and for a period following said determination, transferring from the normally supplied channels to said grouping device a number of items which is increased by a second quantity as compared with the quantities transferred by the normally supplied channels when all the channels are normally supplied, whereby the number of the items in the mixed groups obtained by the cyclical transfer of articles from said channels remains constant.

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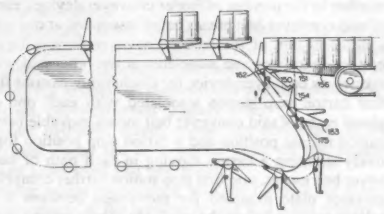
SPACER ESCALATOR FOR SPACING LOADS IN CARTON LOADING MACHINES

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Toronto, Canada

Continuation of Ser. No. 873,000, Jan. 27, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 269,431

Int. Cl.³ B65G 47/26, 17/32

U.S. Cl. 198—425 3 Claims



2. In a carton loading machine having a loading conveyor for supporting and transporting a plurality of load units through a loading station in a longitudinally spaced relationship along a forward run which extends in a loading plane, a load accumulating station and means for feeding load units into the load accumulating station, each load unit having a predetermined length in said forward direction, the improvement of:

(a) a transfer platform in said load accumulating station disposed in a plane which is spaced below the loading plane and rearwardly from the forward run of the loading conveyor,

(b) an escalator conveyor having an escalator run which includes a straight section followed by an arcuate section, said straight section extending forwardly and upwardly

from below said transfer platform to said arcuate section which extends from the upper end of the straight section to the plane of said forward run of said loading conveyor,

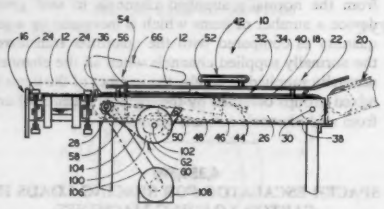
(c) a plurality of load supports mounted on said escalator conveyor and arranged to form a series of escalator steps along said escalator run, each step having a rearwardly directed stop face and a horizontally extending load support face extending rearwardly from its associated stop face, successive rearwardly directed stop faces being spaced from one another in said forward direction a distance equal to said predetermined length of load unit and being disposed above its associated load support face to engage a load unit driven thereagainst by said means for feeding load units into the load accumulating station such that during movement of said load support means along said escalator run at least one stop face is always presented to the load units feeding to said load accumulating station.

4,354,591

CARTON COLLATING AND TRANSFER APPARATUS

John H. Sexstone, Anchorage; Tom Lewis, Louisville; Ken Milliner, Louisville, and Everett N. Finn, Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 19, 1980, Ser. No. 208,354
Int. Cl.³ B65G *47/68*
U.S. Cl. 198—451 **11 Claims**



1. A carton collating and transfer apparatus for distributing cartons received from a plurality of continuously running feeder conveyer devices onto a single take-away conveyer device moving at an angle to the feeder conveyer devices, comprising:

endless conveyer belt means defining plural paths equal in number to the number of feeder conveyer devices, each path of said conveyer belt means being associated at one end with a different one of the feeder conveyer devices to receive cartons therefrom and associated at the other end with said take-away conveyer device for discharging cartons thereon;

a first carton stop station associated with each one of said plural paths of said conveyer belt means movable between a carton release position and a carton stop position for selectively stopping a carton moving in each path of said conveyer belt means, said first stop station further comprising an elevator plate mounted for movement between a carton release position below the top flight of said endless conveyer belt means and a carton stop position above the top flight of said endless conveyer belt means to lift cartons off said top flight; and, stop plate means spaced above the top flight of said endless conveyer belt means over said elevator plate such that when said elevator stop plate moves to a carton stop position it lifts a carton off the top flight and into friction contact with said stop plate;

a second carton stop station associated with each one of said plural paths of said conveyer belt means disposed downstream from said first stop station and movable between a carton release position and a carton stop position for selectively stopping a carton moving in said path of said conveyer belt means, said second stop station being operated in sequence with said first stop station to a carton release position when said first stop station is in a carton stop position, and to a carton stop position when said first stop station is in a carton release position; and,

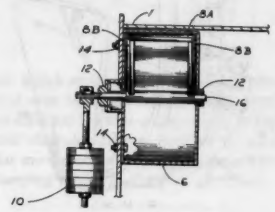
carton accelerator means proximate each of said second carton stop stations to impart linear acceleration to a carton at said second stop station when said second stop station is in a carton release position to move the carton rapidly away from said second stop station and onto the take-away conveyer device located downstream of said second stop station.

4,354,592

SELF-CLEANING APPARATUS FOR REMOVING MATERIAL FROM A ROTATING DRUM

Allan C. Morgan, Chesterfield, and Dan K. Puckett, St. Charles, both of Mo., assignors to Cabot Corporation, Kokomo, Ind.

Filed Aug. 7, 1980, Ser. No. 175,993
Int. Cl.³ B65G *17/36*
U.S. Cl. 198—703 **6 Claims**



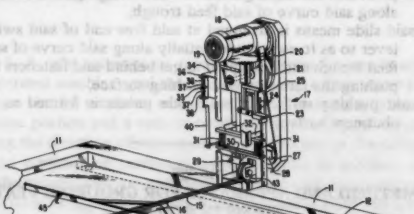
1. Apparatus for removing material from a rotating drum comprising means through which material enters said drum, means through which material leaves said drum, at least one bucket for lifting material and depositing it in said means through which material leaves said drum, said bucket being affixed to rotate with said drum, means for cleaning said bucket without stopping the rotation of said drum, said cleaning means being comprised of scraping means, and means for maintaining said scraping means in a substantially fixed position relative to the local gravitational force vector.

4,354,593

MECHANISM FOR CLEANING SUBFLOOR OF LIVESTOCK CONFINEMENT UNIT

Orville J. Diedrich, Iona, Minn. 56141

Filed Mar. 18, 1981, Ser. No. 244,973
Int. Cl.³ B65G *25/04*
U.S. Cl. 198—718 **9 Claims**



1. For use in moving waste material from a subfloor having curbed edges to a gutter at one end of said subfloor, a mechanism including a scraper blade adapted to extend laterally across said subfloor between said edges, cable means attached

to said blade and extending longitudinally of said subfloor in opposite directions from said blade, pulley means engaging said cable means at both ends of said subfloor to direct said cable means, drive means engaging said cable means in pulling relationship, said drive means being reversible so that said cable means may be pulled in opposite directions, control means connected to said drive means adapted to control said drive means, said control means having a central position and two opposite positions, said opposite positions providing for pulling said cable means in opposite directions and said central position providing a neutral position in which said drive means does not pull, and operating means operably connected to said control means and in engagement with said cable means, said operating means including rocking arm means operably connected to said control means, pulleys rotatably mounted near opposite ends of said rocking arm means, said cable means being entrained over said pulleys such that the cable on one of said pulleys pulls said scraper blade in one direction and the cable over the opposite pulley pulls said blade in the opposite direction whereby extra tension on one pulley relaxes the tension in the opposite pulley thereby causing movement of said rocking arm means to move said control means to the neutral position.

4,354,594

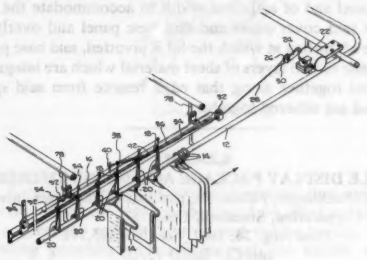
FLEXIBLE CONVEYOR SYSTEM

Robert C. Galloway, 1449 Parkhurst St., Simi Valley, Calif. 93065

Continuation of Ser. No. 929,521, Jul. 31, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,914

Int. Cl.³ B65G *25/00, 37/00*

U.S. Cl. 198—743 **1 Claim**



1. In a fail-safe system for the storing, conveying or general purpose handling of products along a track:

an elevated and elongated generally horizontal rail;

supporting means or hangers for products adapted for longitudinal movement along said rail;

a guide extending generally parallel to and coextensively with said rail;

a plurality of slide means mounted for movement along said guide;

a finger pivotally supported on each slide means for limited rotation about a horizontal axis and having a lower portion for abuttingly engaging and moving said supporting means along said rail and an upper extension projecting above said axis;

a flexible tension element interconnecting the finger extensions;

selectively actuable toggle means carried by the guide for applying tension to said flexible tension element whereby to raise the finger lower portions out of engagement with the supporting means;

means including collapsible tension means interconnecting said slide means for reciprocating said fingers to successively move said supporting means an incremental distance along said rail in one direction, and then move said fingers in the opposite direction past the supporting means previously engaged by said fingers and beyond the next supporting means, preparatory to moving the next supporting means along said rail in said one direction in the next cycle of reciprocation of said fingers;

means movably carried by the guide for applying a biasing force to hold said slide means apart and to hold said tension means fully extended between said slides; and

selectively releasable means for mounting the biasing means at a selected point in the guide for normal operation, whereby release of the releasable means permits the biasing means to be moved along the guide means, in turn permitting the slide means and fingers to be moved into compact relation, with said tension means fully collapsed, whereby said rail may be employed for general purpose materials handling or storage.

4,354,595

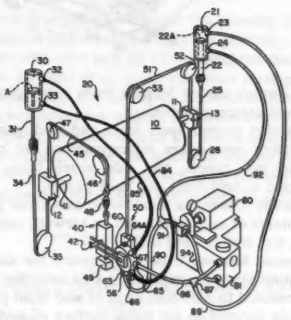
APPARATUS AND METHOD FOR MAINTAINING POSITIONAL ALIGNMENT BETWEEN TWO SPACED-APART POINTS ON A MOVEABLE MEMBER

Augustus T. Reynolds, 3300 Woodwardia Dr., Charlotte, N.C. 28210

Filed Jul. 3, 1980, Ser. No. 165,527

Int. Cl.³ B65G *39/16;* **F15B** *11/22*

U.S. Cl. 198—807 **17 Claims**



1. An apparatus for maintaining relative positional alignment between two spaced-apart points on a movable member, comprising:

(a) a hydraulic pump;

(b) first hydraulic means operatively connected to said hydraulic pump and to a first point on the member for applying a reference hydraulic pressure to the member and for moving the member to maintain said applied pressure at a constant, pre-determined pressure level;

(c) second hydraulic means operatively connected to said hydraulic pump and to a second point on the member spaced apart from said first point;

(d) sensing means cooperating with the member for detecting movement of the member at said first point relative to said second point; and

(e) hydraulic servo-valve means cooperating with said sensing means and selectively directing hydraulic fluid to said second hydraulic means in response to said sensing means for moving the member at said second point in a direction and for a distance corresponding to the movement of the member at said first point, said hydraulic servo-valve means comprising a circular valve housing adapted for unison movement with one of said first and second points on the member and including port means for conveying hydraulic fluid to said second hydraulic means, and a valve body mounted for rotational movement within said valve housing and cooperating with the other of said first and second points on said movable member for directing fluid to said second hydraulic means in response to and

proportional to the relative movement between said first point and said second point on the movable member; whereby tthe member at said second point follows the movement of the member at said first point and thereby maintains relative positional alignment between said first point and said second point on the member.

4,354,596

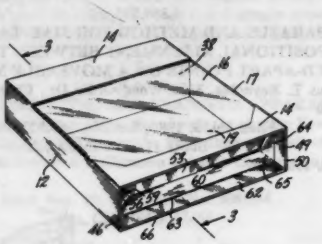
CARTON WITH INVERTED INTERNAL PLATFORM AND CARTON BLANK THEREFOR

John J. Lavery, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 23, 1981, Ser. No. 236,936

Int. Cl.³ B65D *25/54, 65/16*

U.S. Cl. 206—45.31 **2 Claims**



1. A display carton formed from a one-piece paperboard blank, said carton comprising:

(a) parallel spaced apart front and back panels having respective side edges interconnected by parallel spaced apart side panels, said side panels being foldably connected to said front and back panels;

(b) means forming a window in said front panel whereby contents of said carton can be viewed, said window having top, bottom and side edges;

(c) means forming a bottom closure for said carton, said bottom closure comprising a first inverting panel foldably connected to a bottom edge of said front panel and adhesively secured to the inside surface of said front panel; a first support panel foldably connected to said first inverting panel and extending perpendicularly therefrom toward said back panel; a second inverting panel foldably connected to a bottom edge of said back panel and adhesively secured to the inside surface of said back panel; a second support panel foldably connected to said second inverting panel and extending perpendicularly therefrom toward said front panel, said first and second support panels having freely pivotable overlapping adhesive-free portions operative to support an article disposed in the carton, and said first and second support panels being disposed closely adjacent to said bottom edge of said window; and

(d) means forming a top closure for said carton, said top closure comprising a first support panel foldably connected to a top edge of one of said front and back panels and adhesively secured to the inside surface of said one of said front and back panels; a second support panel foldably connected to said first support panel and extending perpendicularly therefrom toward the other of said front and back panels; and a third support panel foldably connected to said second support panel and extending perpendicularly therefrom toward the upper edge of the other of said front and back panels, said third support panel lying flat against the inside of said other of said front and back panels but free of securement thereto, whereby said second and third support panels can be pulled through the upper end of said carton to permit placing of contents in said carton; said top closure further comprising a top flap foldably connected to a top edge of the other of said front and back panels and extending perpendicular thereto toward said one of said front and back panels, said top flap having a lip panel foldably connected thereto and extending perpendicular to said top flap in face-to-face contact with an exposed surface of said first support panel.

4,354,597

COVERS FOR CASSETTE BOXES

Norman J. Garrod, Great Common, Bletchingley, Surrey, England

Division of Ser. No. 968,214, Dec. 11, 1978, abandoned. This application Mar. 5, 1980, Ser. No. 127,429

Int. Cl.³ B65D *85/672*

U.S. Cl. 206—387 **7 Claims**

1. The combination of a box comprising a base and a lid mounted for pivotal movement relative to said base about an axis along one side of said box and a cover for said box comprising: a base panel for overlying the base of the box, said base of said box being attached to said base panel of said cover; a cover panel for overlying the lid of the box, said cover panel being made of two layers of sheet material the inner one of said layers of said cover panel being inserted first into said box to overlie the inner surface of said lid thereof without attachment thereto; and a spine panel connecting said base panel to said cover panel and of sufficient width to accommodate the box between said cover panel and said base panel and overlying that side of the box at which the lid is pivotted, said base panel being made of two layers of sheet material which are integrally connected together along that edge remote from said spine panel and are adhered together.

4,354,598

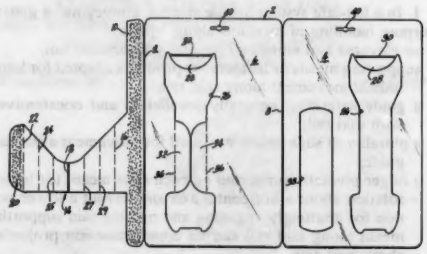
ARTICLE DISPLAY PACKAGE AND BLANK THEREFOR

Joseph F. Schillinger, Fulton, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 24, 1981, Ser. No. 295,771

Int. Cl.³ B65D *73/00*

U.S. Cl. 206—462 **16 Claims**



1. An article display package comprising:

(a) a paperboard front panel;

(b) a paperboard back panel foldably connected to one edge of said front panel, said back panel being juxtaposed in face to face relationship with said front panel;

(c) a tuck flap foldably secured to one of said front and back panels, said tuck flap being sandwiched between said front and back panels and adhesively secured to the other of said front and back panels whereby opposite edges of said front and back panels are secured together;

(d) means forming an article receiving opening in said front

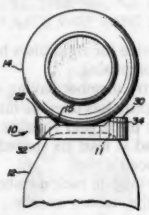
and back panels, said article receiving opening being configured substantially to the shape of the article to be received therein; and

(e) uninterrupted paperboard retention panel extending from an edge of said tuck flap between said front and back panels to a first edge of said article receiving opening, said retention panel having a first portion extending from said first edge of said opening outwardly from said front and back panels, a second portion secured to one of said front and back panels and extending from the opposite edge of said opening outwardly from said front and back panels, and a third medial portion foldably connected to said first and second portions and extending therebetween whereby said retention panel bridges one side of said opening to embrace only a portion of a relatively bulky article positioned in said opening to retain the article in said opening while permitting the remainder of the article to be displayed.

4,354,599
KEG SADDLE

Donald L. Brown, 326 N. 38th Pl., and Gareld D. Calvert, 4094 Jasper Rd., both of Springfield, Oreg. 97477

Filed Sep. 5, 1980, Ser. No. 184,333
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—503 **5 Claims**



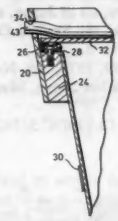
1. A saddle adapted to hold and restrain two cylindrical objects such as beer kegs, one on top of the other and comprising; a generally cylindrically shaped saddle having the axis extending generally vertically through the saddle, a lower circular and concave surface of the saddle disposed symmetrically about the axis thereof, a portion of said lower surface including means to contact a small portion of the circumferential side edge of said upright keg adjacent the top and the lower surface adapted to be seated on the top surface of an upright keg, and an upper angulated surface of the saddle disposed symmetrically about a diameter thereof, said upper angulated surface including a pair of spaced shoulders extending outwardly of the angulated surface and defining side walls which contact generally tangentially the side walls of the keg on opposite sides of the keg center, said shoulders and side walls extending substantially the full dimensional width of the saddle and adapted to hold a keg oriented on its side and prevent said side oriented keg from excessive rolling.

4,354,600
NESTABLE BULK CONTAINERS

John Treiber, Chaussee De la Hulpe 187-189 1170, Brussels, Belgium

Continuation of Ser. No. 64,450, Aug. 7, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 275,535
Int. Cl.³ B65D *21/04, 45/28*
U.S. Cl. 206—508 **10 Claims**

1. A nestable, closeable and stackable container having a bottom, a continuous straight-line peripheral side wall upstanding outwardly therefrom in the shape of a frustum, a top peripheral rim defining a plurality of spaced openings, a stiffening member located intermediate said rim and the top extremity of said side wall, a load transferring skirt downwardly dependent from the bottom of said container adjacent the periphery of said bottom, a load supporting lid adapted to sit on said stiffening member, said lid having upstanding chordal reinforcing ribs, closure means comprising at least two closure members each having an actuating portion and at least one closure portion, said actuating portion moving in a plane generally parallel to and directly adjacent said lid to move each closure portion between a first closed position in which the closure portion is engaged in a rim opening securing said lid against said stiffening member and a second open position in which the

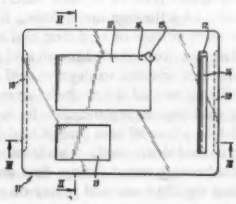


closure portion is disengaged from said rim opening whereby said closure means in said closed position lies generally flush to said lid, and whereby with said lid closed, said containers can be stacked with the skirt of an upper container resting on the chordal reinforcing ribs on the lid of a lower container the weight of a stacked container passing downward onto the lid, then to the stiffening member, then to the side wall and finally to the skirt of the container below, and with said lid removed said containers can be nested together with the skirt of an upper container resting directly on the bottom of a container below.

4,354,601
TRAYS FOR CREDIT CARD TRANSACTIONS AND THE LIKE

Derek Harrison, Moss Nook Restaurant, Ringway Rd., Manchester, England

Continuation-in-part of Ser. No. 99,514, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 11,230, Feb. 12, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 216,316
Claims priority, application United Kingdom, Feb. 22, 1978, 7149/78; Jun. 12, 1980, 8019283
Int. Cl.³ B65D *1/34, 1/36, 6/54;* A45L *11/00*
U.S. Cl. 206—564 **7 Claims**



1. A credit card tray comprising:

a generally flat, broad, thin body having a flat, upper writing surface, a lower surface, and peripheral edges, said body being of predetermined thickness;

said upper surface having a generally rectangular, shallow, recess for receiving and retaining a credit card substantially flatwise therein, and having a generally rectangular, shallow recess for receiving and retaining a credit card slip substantially flatwise therein;

said credit card recess and said credit card slip recess having

their respective shorter lateral edges in substantial rectilinear alignment so that any signatures thereon may be visually compared;

the depth of at least a portion, of each of said credit card recess and said credit card slip recess reducing to zero at an edge of said respective recess or portion thereof.

4,354,602
DEVICE FOR INSPECTING THE EXTERNAL APPEARANCE OF SOLID MEDICINE

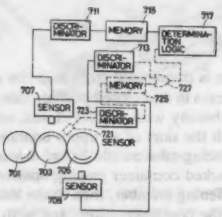
Noriomi Miyoshi; Yoshio Sugiyama; Tetsuji Kawasaki, all of Kawasaki; Jun Yamaguchi, Hiro; Kouji Shiino, Hiro, and Mamoru Shiratori, Hiro, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki and Sankyo Company, Limited, Tokyo, both of, Japan

Filed Mar. 19, 1979, Ser. No. 22,004

Claims priority, application Japan, Mar. 17, 1978, 53-30821; Aug. 7, 1978, 53-96007

Int. Cl.³ B07C 5/342

U.S. Cl. 209—545 **22 Claims**



1. A device for inspecting the external appearance of pieces of solid medicine, comprising: a solid medicine piece supply section; a first drum-shaped conveying section for conveying pieces of solid medicine supplied by said supplying section at equal intervals so that one surface of each piece of solid medicine is observed; a second drum-shaped conveying section for receiving the pieces from said first drum-shaped conveying section and conveying the pieces at equal intervals so that an opposite surface of each piece is observed; first and second sensor means provided adjacent to said first drum-shaped conveying sections for observing both surfaces of each piece of solid medicine respectively; means for rotating said first and second drums; first and second discriminating means for determining whether each piece of solid medicine is acceptable or unacceptable according to observation results provided by said first and second sensors; adjustment means for positioning said first and second drums relative to each other, said adjustment means comprising an adjusting metal fitting fitted around one end of a drum shaft of one of said first and second drums, a pulley secured to said drum shaft through said adjusting fitting, a depressing member adapted to depress said adjusting fitting for fixing said fitting to said drum shaft, screws for loosening and tightening said depressing member to facilitate coarsely adjusting a relative phase of said one of said first and second drums relative to said drum shaft, a protrusion extending rigidly from said adjusting metal fitting, first and second metal fittings extending rigidly from said pulley on opposed sides of said protrusion and having threaded holes provided therein, and first and second adjusting screws fitted through said threaded holes of said first and second metal fittings, respectively, and having ends abutting said protrusion; said adjusting screws providing a fine adjustment of said relative phase; and memory means for storing solid medicine piece discrimination signals produced on the basis of the observation results provided by said first sensor, the discrimination signal based on the observation result provided by said second sensor and the discrimination signals stored in said memory means being supplied to a general determination logic means to determine whether the external appearance of each piece of solid medicine is acceptable or unacceptable.

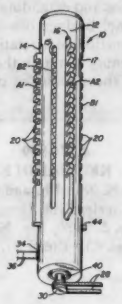
4,354,603
RIGID MAGNETIC DISC STACKER

Floyd Dunn, Sunnyvale, Calif., assignor to Dysan Corporation, Santa Clara, Calif.

Filed Oct. 14, 1980, Ser. No. 196,504

Int. Cl.³ B65G 1/12

U.S. Cl. 211—1.5 **6 Claims**



1. A stacking device for rigid discs having an interior aperture, said device comprising:

an elongate registry member having external cross sectional dimensions slightly less than the interior dimensions of the aperture in the discs, said registry member having a hollow interior and at least six spaced axial elongate slots in the outer surface thereof;

a pair of sets of elongate rack members located in the alternating slots in the registry member, each said rack member having a plurality of outwardly directed teeth, the rack members of one set, designated set A, being movable radially and axially with respect to the registry member, and the rack members of the other set, designated set B, being movable radially with respect to the registry member; and

means for operating the sets of rack members to load discs so that set A moves outwardly to receive a disc with set B recessed, set A moves downwardly carrying the received disc, set A moves inwardly as set B moves outwardly to receive the disc from set A, set A moves upwardly and then outwardly to be in a position to receive the next disc and to take the disc previously received from set B as set B moves inwardly, and the process is repeated to load a plurality of discs and is reversed to unload the discs.

4,354,604
MERCHANDISE STOCKING SYSTEM AND METHOD, AND EQUIPMENT USED THEREWITH

Harold Isaacs, 2567 Lafayette Dr., University Heights, Ohio 44118

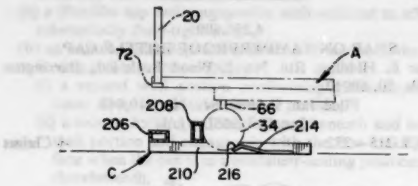
Division of Ser. No. 784,148, Apr. 4, 1977, Pat. No. 4,263,986. This application Dec. 22, 1980, Ser. No. 219,395

Int. Cl.³ A47F 7/00

U.S. Cl. 211—17 **2 Claims**

1. A parking frame for parking a plurality of rectangular wheeled carts in side-by-side substantially parallel relationship comprising; an elongated main frame member, at least three elongated side frame members secured to said main frame member in perpendicular relationship therewith and in equidistantly spaced relationship to one another to define a plurality of side-by-side cart receiving spaces along said main frame member, said spaces having opposite sides defined by said side frame members and inner ends defined by said main frame member, said spaces having open outer ends opposite from said

inner ends, ramps located within said spaces along said sides thereof adjacent said inner ends, said ramps including upwardly sloping portions which slope upwardly in a direction from said outer ends toward said inner ends and downwardly



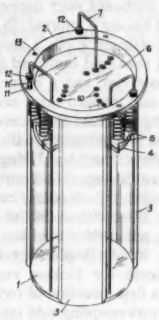
sloping portions which slope downwardly from said upwardly sloping portions toward said inner ends, said downwardly sloping portions being spaced from said inner ends to define wheel receiving spaces.

4,354,605

ADJUSTABLE DISPENSER

James W. Brutsman, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,515
Int. Cl.³ A47B 9/02; B65G 5/02
U.S. Cl. 211—49 D 3 Claims



1. In a dispenser having an elongated shape with a surrounding annular top flange and a table movable lengthwise therein toward and away from said flange, means for adapting said dispenser to handle stacks of material of different sizes said means comprising

a plurality of wire guide rods releaseably connected only to said top flange and extending downwardly therefrom lengthwise of said dispenser and only through said table and thereby being removable from said dispenser; and

said guide rods extending through said table being positioned relative to one another to receive and steady a stack of material of a predetermined size.

4,354,606

BEARING ASSEMBLY FOR A PEDESTAL CRANE

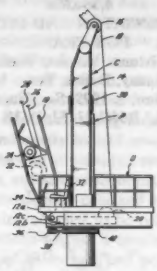
William D. Morrow, and William R. Bath, both of 6116 Cunningham, Houston, Tex. 77041

Filed Mar. 19, 1980, Ser. No. 131,751
Int. Cl.³ F16C 17/06
U.S. Cl. 212—175 5 Claims

1. In a pedestal crane having upperworks formed with a central opening thereof for receiving a pedestal therein, a bearing assembly comprising:

two arcuate shoes adapted to be disposed about the pedestal, each of said arcuate shoes having an outer shoe surface and an inner shoe surface, said outer shoe surface engaging the central opening in the upperworks;

a plurality of mounting flanges formed with said outer shoe surface of each of said arcuate shoes for releasably mounting said arcuate shoes with the upperworks; and,



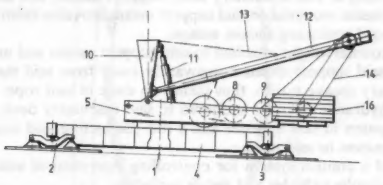
bearing means affixed to and in full engagement with said inner shoe surface of each of said arcuate shoes for engaging the outer surface of the pedestal for reducing friction between the upperworks and the pedestal when rotating the upperworks of the pedestal crane about the pedestal.

4,354,607

CRANE FOR HEAVY LIFTING WITH AN ERECTION COLUMN FOR THE MAIN JIB

Franz Hilgers, Düsseldorf, Fed. Rep. of Germany, assignor to Leo Gottwald KG, Düesseldorf-Reisholz, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,505
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933382
Int. Cl.³ B66C 23/00
U.S. Cl. 212—175 11 Claims



1. In a crane comprising an upper chassis, means mounting said upper chassis for rotatable slewing movement about a vertical axis, a main jib, means pivotally mounting said main jib on said chassis for pivotal movement in a vertical plane, an erection column, means pivotally mounting said erection column for pivotal movement in said vertical plane, means for connecting said column to said jib whereby said jib follows pivotal movement of said column in one direction, and tackle means acting between said column and said chassis for pivotally moving said column to raise said jib from an assembly position into an upright operative position, the improvement wherein said jib includes a lower component, means pivotally mounting said lower component on said chassis, means for connecting said lower component to said column and pivoting drive means acting directly on said lower component to enable said lower component to be moved pivotally before remaining parts of said jib are assembled, whereby, to assemble said jib, said lower component is moved by said pivoting drive means into a raised position, said lower component is connected by said connecting means to said column, which is lowered and directed away from said lower component, and said lower

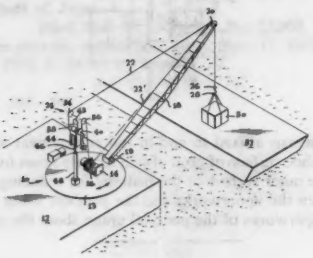
component is then moved by said pivoting drive means in a direction away from said column into said assembly position and moves said column with it, causing said column to be raised into an upright position.

4,354,608

MOTION COMPENSATOR AND CONTROL SYSTEM FOR CRANE

Donald J. Wudtke, Mount Vernon, Wash., assignor to Continental Emsco Company, Dallas, Tex.

Filed Jun. 8, 1979, Ser. No. 46,748
Int. Cl.³ B66C *23/52*; B63B *27/00*
U.S. Cl. 212—191 **8 Claims**



1. For use with a crane hoist for lifting a load including a platform, a rotatable machinery deck on said platform, a boom attached to said machinery deck, a sheave at the end of said boom, a hoist including a drum, a rope on said drum reeved over said sheave and a crane hook at the end of said rope for attachment to said load, a motion compensation system comprising:

a reeving system carrying said rope between said boom sheave and said drum;

said reeving system including stationary sheave means affixed to said machinery deck, support means, and sheave means mounted on said support means movable relative to said stationary sheave means;

a counterweight attached to said support means and urging said support means downwardly away from said stationary sheave means, thus taking up slack in said rope;

a hydraulic cylinder anchored to said machinery deck;

a piston in said cylinder and a rod connecting said support means to said piston;

and a control system for controlling operation of said hydraulic cylinder and piston including:

first and second fluid conduits connected to opposite ends of said cylinder;

branch conduits interconnecting said first and second conduits;

a check valve in one branch conduit permitting flow from the head end to the rod end of said cylinder while preventing flow from the rod end to the head end of said cylinder;

a blocking valve in another of said branch conduits in parallel with said check valve and when open permitting flow from the rod end to the head end of the cylinder and when closed preventing flow from the rod end to the head end of the cylinder;

said blocking valve including means for moving the blocking valve between open and closed positions;

a source of power for operating the control valve;

means connecting said source of power to said blocking valve;

anti-slack valve means located in said last mentioned connecting means for controlling the application of power to said blocking valve to shift the blocking valve between open and closed positions; and

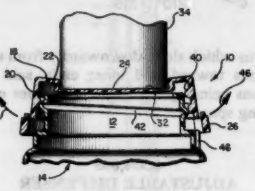
override means connected to the fluid conduit connected to the rod end of said cylinder and responsive to a selected pressure within the rod end of said cylinder overriding said anti-slack valve means and preventing movement of the blocking valve from closed to open position while pressure within the rod end of said cylinder exceeds said selected pressure due to the load on said rope.

4,354,609

SNAP-ON TAMPERPROOF BOTTLE CAP

Walter E. Hidding, Rte. No. 2, Wood Rock Rd., Barrington Hills, Ill. 60010

Filed Jan. 9, 1980, Ser. No. 110,648
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **4 Claims**



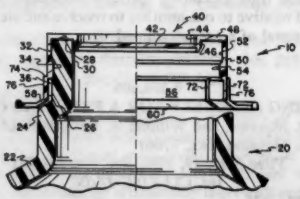
4. A tamperproof closure for a bottle or other container having a neck portion with an external rib and at least one external pawl spaced from said rib, said closure comprising: a cap body of flexible, resilient material, including an annular rim, a first annular outboard skirt depending from the outer edge of said rim and having a internal rib adapted for lockable coaction with the bottle neck rib, a second annular inboard skirt of lesser depth than said outboard skirt depending from the inner edge of said rim, and a dome-shaped circular top panel connected to said inboard skirt, said top panel and said inboard skirt defining a recess for receiving a cap-mounting tool and said rim and its connection with said skirts cooperating to define a resilient, peripheral hinge section means for producing an outward flexing of said outboard skirt and resultant movement of said cap rib over said bottle neck rib and into locking engagement therewith upon the imposition of downward, cap-mounting pressure on said top panel by a said tool; a tamperproof ring having a plurality of radially inwardly extending ratchet teeth for locking engagement with said bottle neck pawl in a first direction of rotation; and a plurality of breakable connectors coupling said tamperproof ring to the outboard skirt of said cap body.

4,354,610

REUSABLE CONTAINER CLOSURE CAP

Milton Kessler, Youngstown, and Myron E. Ullman, Jr., Canfield, both of Ohio, assignors to Kessler Products Co., Inc., Youngstown, Ohio

Filed Aug. 29, 1980, Ser. No. 182,628
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—253 **5 Claims**



1. A closure cap for sealing the neck portion of a container such as a milk bottle, the neck portion having an upstanding annular rim, a first outer wall portion depending therefrom, a

first outer locking surface spaced from the rim and located about the periphery of the neck portion beneath said outer wall portion, the first wall portion having a diameter different from the diameter of the first locking surface,

the closure cap being formed of a material having limited flexibility and comprising:

(a) a disc-like top wall engageable with said rim to effect a substantially fluid-tight seal;

(b) an annular skirt depending from said top wall, the skirt having on its inner periphery:

(i) a second wall portion conforming generally to the outer contour of said first wall portion;

(ii) a second locking suface disposed beneath said second wall portion and engageable with the first locking surface when the cap is in a container-sealing position; and, therebeneath,

(iii) a lower annular skirt area having spaced generally vertically extending rupture zones therein, the rupture zones not extending upwardly into said second locking surface,

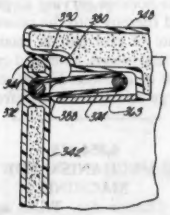
(iv) said first and second locking surfaces including complementary interfitting circumferential annular rib and groove elements, and,

(c) a tab projecting laterally outwardly of the skirt from a location near the lower edge of said skirt, the tab being disposed between said vertically extending rupture zones whereby, upon upward flexure of the tab, the rupture zones will fail and permit said lower skirt area to be circumferentially expanded, thereby permitting the first and second locking surfaces to be flexibly disengaged to permit ready removal of the cap from the container and wherein the integrity of said locking surfaces remains intact notwithstanding failure of the rupture zones therebelow to permit ready replacement of the cap onto the container for resealing the same.

4,354,611
TOP OPENING RECEPTACLE FOR TRASH COLLECTION AND MANAGEMENT SYSTEMS

Robert L. Propst, and Paul L. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 28,256, Apr. 9, 1979, Pat. No. 4,285,624.
This application Sep. 22, 1980, Ser. No. 189,800
Int. Cl.³ B65D *43/24*
U.S. Cl. 220—335 7 Claims

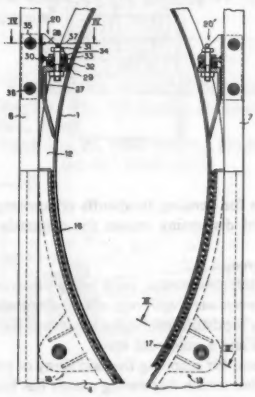


1. In a trash collection, transport, and management system for an office environment, a trash receiving, storing, and transporting receptacle comprising a body portion having an open upper end, a bottom wall, a front wall, a back wall, and a pair of side walls, a cover having a back portion, a front portion, and means on said front portion projecting upwardly therefrom and thence rearwardly to form a handle for said cover, a flexible hinge assembly hingedly supporting said cover on said back wall operable to restrict movement of said cover to pivotal movement on said back wall between an upwardly and rearwardly inclined substantially vertical position in which the center of gravity of said cover is displaced rearwardly of said hinge assembly and a substantially horizontal position wherein said cover overlies said open upper end and said cover front portion projects outwardly over said front wall, said hinge assembly comprising a resilient hinge member extending between the upper end of said back wall and said cover back portion, first retaining means connecting said hinge member to said back wall and second retaining means connecting said hinge member to said cover, at least one of said retaining means being operable to release said hinge member in response to a pulling force of predetermined magnitude applied thereto, said hinge member being located to allow pivotal movement of said cover on said back wall and exert forces on said cover operable to pull said cover toward said back wall, said first retaining means comprising structure forming a first cavity in said back wall, said second retaining means comprising structure forming a second cavity in said cover, each of said first and second cavities having an enlarged retaining portion and a tapered neck portion, and said resilient hinge member having a body portion and substantially enlarged end portions, each of said end portions being adapted to be retained in one of said cavity retaining portions so that a tensile stress of predetermined magnitude applied to said end portion is operable to cause compression of said end portion and flow thereof through said cavity neck portion, thus releasing said hinge member from said retaining means.

4,354,612
SYSTEM FOR ATTACHMENT OF A TANK WITHIN A CONTAINER FRAME

Jean Pelabon, Neuilly, France, assignor to A.N.F. Industrie, Crespin, France

Filed Jul. 28, 1980, Ser. No. 172,694
Claims priority, application France, Aug. 7, 1979, 79 20153
Int. Cl.³ B65D *88/22, 90/20*
U.S. Cl. 220—401 3 Claims



1. A system for attachment of a cylindrical tank within a container frame comprising,

at least two spaced cradles secured in the lower part of said frame transversely to the longitudinal axis of the tank, each cradle having a concave semi-circular support surface which substantially mates with the outer surface of said tank to support the tank,

two vertical upright members for each cradle disposed diametrically oppositely with respect to each other, secured to each cradle and to said frame, each upright member having an inner face facing said tank,

an elastic member inserted between said semi-circular support surface of each cradle and said tank,

lower securing means for securing said tank to each cradle having connecting means which are rigid in the longitudinal direction and allow displacement in the vertical direc-

tion and directions transverse to the longitudinal axis of said tank, and

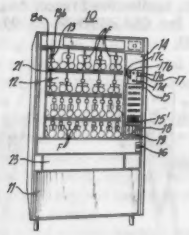
upper retaining means for resiliently retaining said tank against vertical displacement, comprising a pair of upper coupling devices each disposed on opposite upper sides of said tank and comprising a bracket attached to said tank and having a planar substantially horizontal extending element, a cleat member attached to a respective upright member adjacent said bracket and having a planar element disposed in substantially parallel spaced relationship to said planar element of said bracket, an elastic member between said planar members, and connecting means for connecting said bracket and cleat members together with the elastic member effectively compressed to allow limited relative displacement of said bracket and cleat with respect to each other.

4,354,613

MICROPROCESSOR BASED VENDING APPARATUS

Mahendrakumar D. Desai, Colonia, and Thomas E. Shuren, Stanhope, both of N.J., assignors to Trafalgar Industries, Inc., New York, N.Y.

Filed May 15, 1980, Ser. No. 149,951
Int. Cl.³ G07F *11/16*
U.S. Cl. 221—4 **29 Claims**



1. Apparatus for vending foodstuffs comprising:

a plurality of dispensing means for dispensing said foodstuffs;

a power source;

an array of selector means, each being electrically isolated from and associated with one of said dispensing means for selecting a foodstuff, each selector means having an operating state and a quiescent state;

scanning means for scanning the said array of selector means to determine which dispensing means has been selected;

means for identifying a malfunctioning condition for each of said plurality of dispensing means, said means for identifying indicating any of said plurality of dispensing means which have previously malfunctioned and including monitoring means associated with each of said plurality of dispensing means for determining whether its associated dispensing means is in an operating or reset position; and

control means responsive to said scanning means and said means for identifying for coupling said power source to the selected dispensing means if the same has not previously malfunctioned and causing the selection of said selected dispensing means to be refused if an indication that the same have previously malfunctioned is present, said indication that the same has previously malfunctioned including a determination that a selected dispensing means is in an operating position at the time dispensing is required.

4,354,614

CAN AND BOTTLE VENDING

Floyd V. Bookout, Arlington Heights, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 199,011
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—67 **5 Claims**

1. For use in a coin-operated vending machine for dispensing cylindrical articles from magazine means having one or more vertical open bottom storage compartments, each compartment holding one or more staggered stacks of articles to be dispensed, improved article dispensing means commonly blocking the open bottom of each said compartment and comprising: a pair of elongated vend gates, each having a generally clam shell cross sectional configuration presenting a concave interior receptive of articles from each stack of articles in the compartment thereover; spaced mounting means pivotally supporting said gates for arcuate movement about parallel spaced axes extending lengthwise beneath the bottom of the associated said compartment, single cam means rotatably mounted adjacent one end of said pair of gates, cam follower means mounted on each said gate operatively coupling the same with said cam means, and motorized drive means operable to oscillate said cam means selected distances whereby to periodically and alternately pivot said gates in opposite arcuate directions to thereby sequentially move each thereof to and between substantially horizontal lowered and substantially vertically upright elevated positions, and vice versa; movement of each gate to its elevated position causing the same to undersupport the bottom-most article in each staggered stack of articles thereover and movement of each gate from its elevated to its lowered position serving to gradually lower articles undersupported thereby into the concave interior thereof while the other gate of said pair is retained in its elevated position; said motorized means, gates and cam means cooperating during elevation of a lowered gate containing articles to sequentially discharge said articles therefrom one-by-one.

4,354,615

ALTERNATOR MECHANISM FOR DISPENSING MACHINE

James C. Lindsey, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Nov. 6, 1980, Ser. No. 204,714
Int. Cl.³ B65H *3/44*
U.S. Cl. 221—116 **26 Claims**

1. An article dispensing apparatus including a dispensing assembly comprising:

(a) first and second side by side supporting surfaces adapted to support associated first and second row of articles, each supporting surface inclined from an upper end to a lower end,

(b) first and second gate members respectively associated with said first and second support surfaces, each gate member located adjacent the lower end of the associated support surface, and shiftable between two opposite positions:

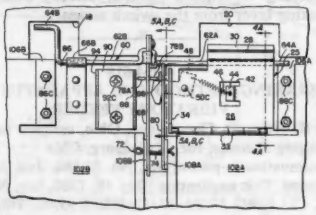
(i) an upper blocking position such that a lowermost arti-

cles in the associated row is blocked from moving off the lower end of the associated support surface,

(ii) a lower releasing position such that the gate member does not block the lowermost article in the associated row from freely moving off the lower end of the associated support surface,

(c) a common receiving area located adjacent the lower ends of said first and second supporting surfaces and adapted to receive articles which have moved off of the lower ends of the first and second supporting surfaces, and

(d) an actuator means cooperating with the gate members to provide for the shifting of the gate members upon the

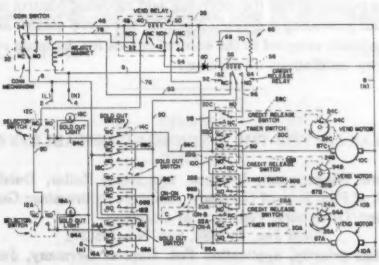


dispensing of an articles from the dispensing assembly, and wherein the first and second gate members are adapted to cooperatively and alternately shift between opposite positions such that, until at least one of said support surfaces is emptied of articles, each gate member changes its position upon the dispensing of an article from the dispensing assembly and the first and second gate members always come to rest with one of the first and second gate members in its upper blocking position and the other of the first and second gate members in its lower releasing position, thereby alternately supplying said common receiving area with articles from the first and second rows.

4,354,616
ALTERNATE COLUMN CIRCUIT RECIPROCATOR FOR MULTIPLE COLUMN VENDING MACHINES

Vernon D. Camp, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Nov. 6, 1980, Ser. No. 204,715
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—116 **4 Claims**



1. A circuit reciprocator for alternately selecting between two separate sources in a vending machine having at least a pair of sources of articles adapted to be selectively dispensed and at least a pair of vend motors, each vend motor corresponding to a separate source and arranged to operate during a vend cycle to dispense an article from the corresponding source when energized, the probability of a mechanism jam occurring being higher at a particular known point of the vend cycle, said circuit reciprocator comprising:

a customer-operable selector switch common to the two article sources;

an on-on type switch having an actuating member movable between first and second positions and operable each time said actuating member is moved from the first to the second position to alternately complete either of a pair of respective electrical energizing circuits between said common selector switch and each of said pair of vend motors;

a pair of rotatable cams respectively driven by each of said pair of vend motors when energized; and

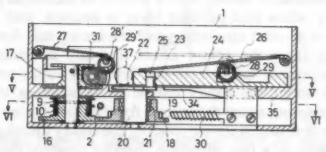
an actuating linkage connected between said cams and said on-on switch actuating member, said actuating linkage arranged such that either of said pair of cams can effect movement of said on-on switch actuating member from the first to the second position at a predetermined point of the vend cycle thereby to complete the circuit to the other of said pair of vend motors so that the other vend motor is energized upon the next operation of said selector switch and vend motors are alternately operated through successive vend cycles during normal operation as said selector switch is successively operated, said actuating linkage further being arranged such that both of said cams may simultaneously be at their respective predetermined points of their respective vend cycles without damage to said circuit reciprocator, and said cams being positioned and configured such that said on-on switch actuating member is moved from the first to the second position prior to the particular known point in the vend cycle where the probability of a mechanism jam is higher, and said cams each having dwell at least sufficient to hold said actuating member in the second position in the event a mechanism jam occurs at the particular known point;

whereby in the event a mechanism jam occurs during the vend cycle of one of said pair of vend motors the other of said pair of vend motors can continue to operate through successive vend cycles as said selector switch is successively operated.

4,354,617
CIGARETTE FEEDING DEVICE

Kunitoshi Okayasu, No 3,5-chome, Kaiko-cho, Atami-shi, Shizuoka-ken,, Japan

Filed Aug. 20, 1980, Ser. No. 179,833
Int. Cl.³ B65D *83/02*
U.S. Cl. 221—147 **9 Claims**



1. A cigarette feeding device comprising

a case

a pushing lever mounted in the case for movement along its longitudinal axis and having a portion extending exteriorly of the case,

a rocking lever having opposite ends, one end being pivotally mounted in the case, a portion of said rocking lever intermediate the two ends engaging said pushing lever, the other end bearing two pulleys,

a rotary chuck mounted for rotation in said case having two pulley portions coaxial therewith,

a first return spring having two ends and an intermediate portion, one end being fixed in the case, the other end being wound about one of the pulley portions of the rotary chuck, the intermediate portion passing around one of the two pulleys on the free end of the rocking lever,

a second return spring having two ends, one end being wound around the other of the two pulley portions of the rotary chuck,

a first fixed position rotatable pulley mounted in said case, the other end of the second return spring being wound about the first fixed pulley,

a third return spring having two ends and an intermediate portion, one end being fixed in said case, the intermediate portion passing around the other of the two pulleys on the free end of the rocking lever,

a second fixed position rotatable pulley mounted in said case, the other end of the third return spring being wound about the second fixed pulley,

a first gear coaxially mounted on said rotary chuck,

a shaft rotatably mounted in said case,

a disk coaxially fixed to one longitudinal end of said shaft and having an upstanding eccentrically placed projection thereon,

a second gear mounted for rotation on said shaft and engaging said first gear,

a ratchet wheel coaxial with and fixed to said second gear,

one-way clutch means interconnecting said second gear and said shaft for driving engagement of said second gear with said shaft in one direction only and permitting freewheeling of said second gear in an opposite direction,

means for preventing said disk and said shaft from rotating in said opposite direction,

bimetallic means fixed at one end to said case and engaging at an opposite end said ratchet wheel,

a conveying plate horizontally slidably mounted in the case for reciprocation between a first position and a second position, said conveying plate having a groove therein parallel to the longitudinal axis of said pushing lever, said projection of said disk engaging said groove,

at least one feeding plate having one end edge thereof pivotally mounted in said case and defining with said case a magazine for a plurality of cigarettes,

means engagable with said at least one feeding plate and said conveying plate for pivoting said at least one feeding plate upon reciprocation of said conveying plate,

heater means for igniting one end of a cigarette, said heater means being mounted in one side wall of the case,

a delivery port in an opposite side wall of the case, said heater means and said port being aligned along a line which is tangent to said rotary chuck, and

switch means mounted in the case engagable by said rocking lever for electrically connecting said heater means and said bimetallic means with a source of electrical power,

whereby when said pushing lever is pressed, said rocking lever is pivoted unwinding and tensioning said first return spring from the rotary chuck thereby unwinding said second return spring from said first fixed pulley and winding it about the rotary chuck while winding the third return spring about the second fixed pulley; the unwinding of the first return spring rotating the rotary chuck and said first gear in a first direction thereby rotating the second gear, the ratchet wheel, the one-way clutch means, the shaft and the disk in said one direction; the rotation of the disk and the eccentric project thereof engaging the groove in the conveying plate causing the conveying plate to be moved horizontally from said first position to said second position; the movement of the conveying plate engaging the means for pivoting the at least one feeding plate causing one cigarette to move from the magazine to a position in front of the conveying plate when said conveying plate reaches said second position; further rotation of said disk and eccentric projection causing the conveying plate to reciprocate back to said first position pushing the cigarette to tangentially engage said rotary chuck; further pivoting of said rocking lever causing further rotation of the rotary chuck in said first direction pressing one end of the cigarette against the heater means, the further pivoting also causing the rocking lever to engage the switch means to pass electrical current to the heater means and the bimetallic means, the bimetallic means being in engagement with said ratchet wheel preventing rotation in said opposite direction until such time that the heater means has ignited the end of the cigarette whereupon the bimetallic means has also heated sufficiently to release the ratchet wheel; upon the release of the ratchet wheel, the tension of the second return spring rotating the rotary chuck and the first gear, in a direction opposite to said first direction and the second gear and the ratchet wheel in said opposite direction, the opposite rotation of the rotary chuck which tangentially engages the lit cigarette delivers the lit cigarette out of the delivery port; the pushing lever, the rocking lever, the first return spring, the second return spring, and the third return spring all returning to original position thereby disengaging the rocking lever from the switch means.

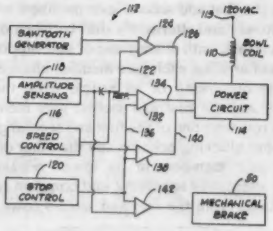
4,354,618
BRAKING METHOD AND APPARATUS FOR VIBRATORY FEEDER

Ronald R. Weyandt, Chesterland, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation-in-part of Ser. No. 53,104, Jun. 28, 1979, abandoned. This application May 15, 1980, Ser. No. 150,096

Int. Cl.³ B65G *27/24, 27/32;* **H02K** *33/02;* **H02P** *3/26*

U.S. Cl. 221—186 **15 Claims**



1. In a material dispensing apparatus including a drive means for vibrating a driven bowl, a control circuit comprising:

(a) a speed control circuit for providing a control signal representing an optimum vibratory oscillation amplitude;

(b) an amplitude sensing circuit for monitoring bowl oscillations and modifying said control signal in response to the amplitude of said oscillations;

(c) a power circuit for receiving said modified control signal and providing a driving signal to the drive means; and

(d) a brake coupled to the control circuit for damping vibratory oscillations of the bowl.

4,354,619
CONTAINER FOR THE DISPENSING OF TABLETS ONE BY ONE

Gerhard Wippermann, Brüggen, and Peter Keller, Duisburg, both of Fed. Rep. of Germany, assignors to Bramlage GmbH, Lohne/Oldenburg, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,271

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922350; May 7, 1980, 3017376

Int. Cl.³ B65D *83/04*

U.S. Cl. 221—263 **14 Claims**

1. In a container for the dispensing of tablets one by one in which, below a drop-out chamber arranged below a sorting through, a container wall has a tablet drop-out opening in front of which, in each case, one of the tablets is released by spring-biased sliding movement so as to drop out, the improvement wherein

two housing caps complementarily formed and telescopi-

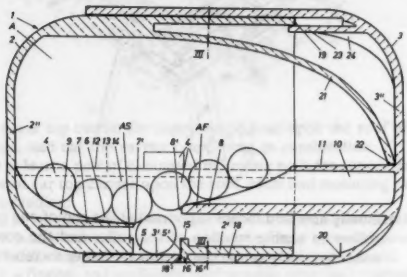
cally insertable within each other form the container and an inner storage space for the tablets,

one of said housing caps forms said drop-out chamber below said sorting trough,

said sorting trough is formed cooperatively by said two housing caps,

spring means for spring-biasing said housing caps,

the other housing cap is formed with a section of a wall closing said drop-out opening from said drop-out chamber in an unoperated basic position of said housing caps in a relatively unstressed position of said spring means,



said other housing cap having a division finger, said division finger closes off said sorting trough from the drop-out chamber in a pushed-together position of said two housing caps,

a side wall of said one housing cap is formed with a window which is open to the outside and communicates with the storage space in a plugged-in connection position of said two housing caps,

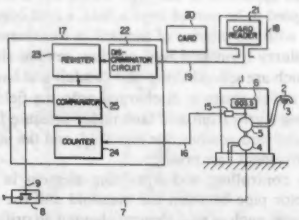
said window is closed in said unoperated basic position of said housing caps by a partial region of a side wall of said other housing cap.

4,354,620

REFUELING SYSTEM ADAPTED TO GASOLINE SERVICE STATION

Kazuhiko Tsuneda, Momoyamamourinagatohigashimachi; Sigeru Sagane, and Hiroaki Haba, both of Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 23, 1980, Ser. No. 152,677
Claims priority, application Japan, May 23, 1979, 54-63672
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—14 **2 Claims**



1. A refueling system for a gasoline service station, comprising:

a refueling machine unit for feeding fuel;

a flowmeter for measuring the amount of fuel fed by said refueling machine; and

controller means for controlling said refueling machine unit, said controller means including:

a register for setting a total amount of fuel to be fed;

a counter for integrating the amount of fuel actually fed;

means for detecting when a first amount of fuel has been integrated by said counter which is equal to one-half the total amount of fuel set into said register, said means then stopping the feeding of fuel by said refueling machine unit for a predetermined period;

means for measuring the amount of fuel fed as a result of the inertia of said refueling machine unit during said predetermined period when the feeding of fuel is stopped, subtracting this measured amount of fuel from the total amount set into said register to provide a corrected fuel setting in said register and correcting the amount of fuel integrated by said counter to increase the count by this measured amount of fuel;

means for restarting the feeding of fuel by said refueling machine after said predetermined period has elapsed, and

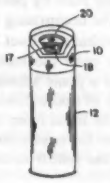
means for detecting a second amount of fuel integrated by said counter after the correction thereof which is equal to said corrected fuel setting, said means then stopping the feeding of fuel by said refueling machine.

4,354,621

CHILD RESISTANT ASSEMBLY FOR AEROSOL DISPENSERS

Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Sequist Valve Co., Div. of Pittway Corp., Cary, Ill.

Filed Jul. 23, 1980, Ser. No. 171,358
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—47 **16 Claims**



1. A child resistant assembly for use with an aerosol container having a tilt valve for discharging an aerosol product upon tilting the valve, comprising in combination:

an actuator button having a terminal orifice;

a valve stem connecting said actuator button with the tilt valve for enabling discharge of the aerosol product from said terminal orifice upon tilting the valve;

an overcap secured to the aerosol container for at least partially covering said actuator button;

a finger actuator movably mounted relative to said overcap;

an aperture disposed in one of said actuator button and said finger actuator for cooperation with non-symmetrical means on the other of said actuator button and said finger actuator; and

means for rotationally mounting said finger actuator relative to said actuator button for enabling said non-symmetrical means to enter said aperture and to transfer the finger movement of the operator to tilt the valve only upon selected orientation of said finger actuator relative to said actuator button.

4,354,622

FLOW CONTROL SYSTEMS

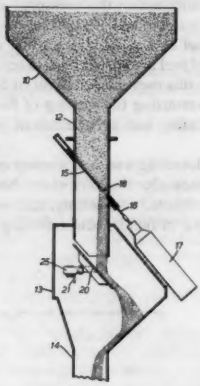
Douglas A. Wood, Usk, Wales, assignor to Technicon Isca Limited, Gwent, Wales

Continuation of Ser. No. 931,801, Aug. 7, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,630

Claims priority, application United Kingdom, Aug. 11, 1977, 33644/77

Int. Cl.³ G01F *1/30*

U.S. Cl. 222—55 8 Claims



1. Apparatus for controlling the rate of flow of a particulate material, comprising a generally vertical duct, a flow control valve positioned in said duct, a motor controlling said valve, a flow rate sensor positioned in said duct (below) immediately beneath said valve, said sensor including an inclined plate onto which the particles will impinge, means supporting said plate for limited movement in a vertical direction, and an electromechanical load cell connected to said plate for sensing the vertical force exerted on said plate by particles falling through said valve, said control valve comprising a movable plate defining an aperture movable within said duct for dispensing the particulate material directly onto the inclined plate, the movable plate being mounted in a plane substantially parallel with but spaced above the plane of said inclined plate, and an electrical control circuit having an input from said sensor and an output connected to said motor for controlling the valve in a sense to close the valve when the sensor detects an increased vertical force.

4,354,623

HEAVY DUTY TUBE WRINGING DEVICE

John B. Gill, and Dorothy E. Gill, both of 519 Shire Ct. Eugene, Oreg. 97401

Filed Jul. 7, 1980, Ser. No. 166,488

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—102 7 Claims

1. A device for progressively wringing a collapsible tubular container, said device comprising,

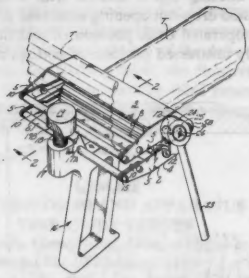
a base,

frames pivotally interconnected at their corresponding ends with one of said frames fixed in place on said base, each of said frames having a cross member and spaced apart opposing side members,

rollers one each resiliently carried by said frames and having intermeshing surfaces which are adapted to coact on the collapsible tubular container positioned therebetween to progressively collapse same to expel tube contents,

bearing plates in place on each of said frames and mounting said rollers on said frames, each of said bearing plates having a flexible arm segment to yieldably mount the ends of said rollers, each of said bearing plates being mounted in juxtaposed parallel relationship with an adjacent frame side member,

removable fasteners attaching said bearing plates to said opposing side members of each of the frames permitting removal and replacement of worn bearing plates, and



manually actuated means supported at the end of one of said rollers to enable rotation of the roller and the coacting roller to jointly act on the tubular container therebetween.

4,354,624

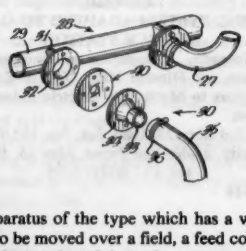
SLURRY SPREADER WITH METERING VALVES

Mofazzal H. Chowdhury, and John W. Bliss, both of Vinton, Iowa, assignors to Farmhand, Inc., Hopkins, Minn.

Filed Jul. 29, 1980, Ser. No. 173,325

Int. Cl.³ A01G *25/09*

U.S. Cl. 222—608 9 Claims



1. In an apparatus of the type which has a wheeled slurry tank adapted to be moved over a field, a feed conduit communicating with the interior of the tank, a transverse manifold to receive slurry from said feed conduit, several slurry injector pipes which are spaced along said conduit and have open ends through which slurry is discharged onto the field, and means for moving slurry from said tank under pressure for discharge through the feed conduit, the manifold, and the injector pipes, the improvement comprising:

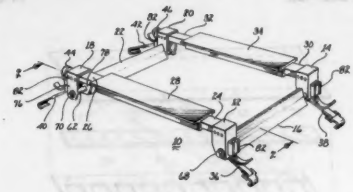
a flow controlling and equalizing element in each slurry injector pipe between the manifold and the open end of the pipe, each of said elements having an orifice and being formed of elastomeric material which can flex to facilitate passing solid debris through said orifice, said orifices being small enough to produce a positive pressure head in the manifold, and all of said elements being effectively identical so as to maintain substantially the same pressure drop across each one of said injector pipes, whereby all said pipes deliver substantially equal quantities of slurry per unit time under varying conditions of operation.

4,354,625

CAR TOP CARRIER

Charles B. Peoples, Scottsdale, Ariz., assignor to U-Haul International, Inc., Phoenix, Ariz.

Filed Apr. 6, 1981, Ser. No. 251,265
Int. Cl.³ B60R 9/00
U.S. Cl. 224—329 16 Claims



1. A car top carrier for supporting a load upon the roof of a vehicle, said car top carrier comprising in combination:

(a) at least a pair of elongated mounting pads for supporting said car top carrier upon the roof, each said mounting pad including:

i. at least one face configured to be conformable with the lateral curvature of the underlying roof area and internally supporting said elongated mounting pads; and

ii. a flexible rod resiliently conformable with the longitudinal curvature of the underlying roof area,

whereby each said mounting pad is in mating contact with the underlying surface area and distributes any load imposed upon the mounting pad uniformly across the underlying roof area;

(b) at least two sets of telescoping members for maintaining said pair of mounting pads at a selectable width and for supporting the load placed upon said car top carrier, each said set of telescoping members including means for adjusting the length of said set of telescoping members;

(c) a casting disposed at each end of each set of said sets of telescoping members for engaging one end of one of said mounting means; and

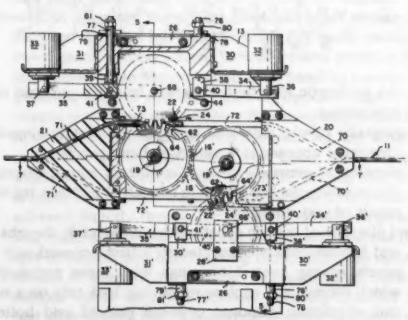
(d) hook and strap means extending from each of said castings for securing said car top carrier to the roof of the vehicle.

4,354,626

APPARATUS FOR FEEDING A PLURALITY OF WIRES

Joseph E. Brandewie, Dunedin, Fla., and Walter C. Shatto, Jr., Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 11, 1980, Ser. No. 215,295
Int. Cl.³ B65H 51/10
U.S. Cl. 226—109 2 Claims



1. Wire feeding apparatus comprising:

wire feed means operative to feed a first plurality of wires on a first level and a second plurality of wires on a second level, said first plurality of wires passing through first parallel planes which are perpendicular to said first level, said second plurality of wires passing through second parallel planes which are perpendicular to said second level, said first planes being parallel to and alternate with said second planes,

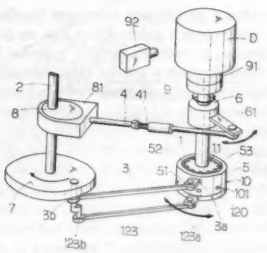
guide means operative to distribute said first and second pluralities of wires to said first and second levels from a single planar array, said guide means comprising laminas in said first and second parallel planes, each lamina having a guide channel cut in one surface thereof, alternate laminas having guide channels directed to said first level while remaining laminas have guide channels directed to said second level, said laminas being sandwiched together so that each guide channel is enclosed by the adjacent lamina to form a tunnel.

4,354,627

DEVICE FOR HIGH SPEED FEEDING OF A TAPE OR THE LIKE

Kyoichi Yamashita, 2361 Nippa-cho, Kohoku-ku, Yokohama-shi, Kanagawa 223, Japan

Filed Nov. 4, 1980, Ser. No. 203,876
Claims priority, application Japan, Nov. 9, 1979, 54-144312
Int. Cl.³ B65H 17/22
U.S. Cl. 226—188 3 Claims



1. In a device for high speed feeding and stopping of an article which comprises a shaft, a drum for carrying said article fitted to said shaft, a first clutch having an external cylinder and being mounted on said shaft, a high speed crank for driving said drum at a high speed linked to said shaft with said first clutch, a second clutch on said shaft, and a low speed crank for driving said drum at a low-speed linked to said shaft with said second clutch, the improvement which comprises a brake disk integral with said shaft, a steel ball containing cylinder integral with the external cylinder of said first clutch for high speed driving, a plurality of steel balls arranged between said brake disk and said steel ball containing cylinder, and a plurality of projections positioned closely to said steel balls interposable between said brake disk and said steel balls, whereby said steel balls are detached from said brake disk during the backward stroke period of the external cylinder of said first clutch for high speed driving.

4,354,628

SURGICAL STAPLER APPARATUS HAVING PIVOTALLY RELATED STAPLE HOLDER AND ANVIL

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 29, 1980, Ser. No. 188,691
Int. Cl.³ B25C 1/00
U.S. Cl. 227—19 33 Claims

1. A surgical staple cartridge for use with an actuator assembly including a rigid frame having a U-shaped portion for

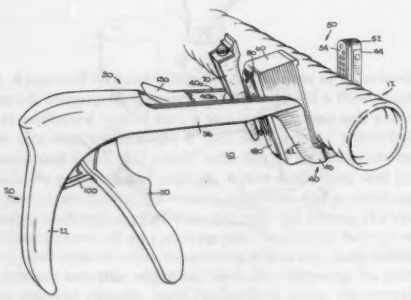
simultaneously forming a plurality of surgical staples in body tissue comprising:

an anvil member for clinching surgical staples driven against it;

a staple holder pivotally connected to the anvil member adjacent one end of the anvil member, the staple holder containing a plurality of surgical staples and including staple driving means for simultaneously driving all of the staples from the staple holder; and

means associated with the anvil member for allowing the cartridge to be removably mounted on the actuator frame so that the anvil member is adjacent a first leg of the U-shaped portion, so that the pivotal connection between the anvil member and the staple holder is adjacent the base of the U-shaped portion, and so that the staple holder is adjacent a second leg of the U-shaped portion, the staple holder being movable relative to the frame when the cartridge is thus mounted on the frame so that when the staple holder is pivoted away from the anvil member, the tissue to be stapled can be positioned between the anvil member and the staple holder via the open side of the U-shaped portion.

31. The method of applying a plurality of surgical staples to body tissue comprising the steps of:



placing a disposable surgical stapling cartridge in an actuator, the cartridge including an anvil member and a staple holder pivotally mounted adjacent one end of the anvil member and containing a plurality of surgical staples, and the actuator including a frame for supporting the anvil member and means associated with the frame for pivoting the staple holder relative to the anvil member and driving the staples from the staple holder;

positioning the actuator, with the staple holder pivoted away from the anvil member, relative to the body tissue to be stapled so that the body tissue is between the anvil member and the staple holder;

operating the actuator to pivot the staple holder substantially parallel to the anvil member so that the body tissue is clamped between the staple holder and the anvil member;

operating the actuator to drive the staples from the staple holder, through the clamped body tissue, and against the anvil member to crimp the staples and thereby staple the tissue;

operating the actuator to pivot the staple holder away from the anvil member to release the stapled body tissue from the cartridge; and

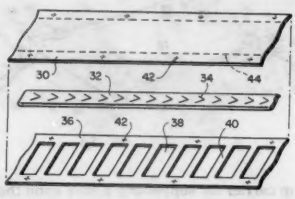
removing the cartridge and the actuator from the stapled tissue.

4,354,629

SOLDER DELIVERY SYSTEM

Willie K. Grassauer, Menlo Park, and William M. Robinson, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 9, 1980, Ser. No. 158,034
Int. Cl.³ B23K 3/00
U.S. Cl. 228—56 14 Claims



1. A solder delivery system comprising:

(a) two layers of polymeric material, at least one of said layers having a plurality of perforations defined therein and extending through said at least one layer; said plurality of perforations being arranged such that wall portions of the perforations define means providing apertures in said at least one layer; and

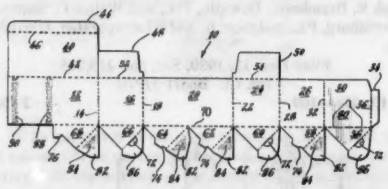
(b) a solder strip disposed between and in operative contact with said layers; said solder strip extending continuously along said layers and traversing at least two of said means, said wall portions and apertures being arranged to divide said solder strip into at least two discontinuous portions and direct the flow of said discontinuous solder portions through said apertures when said solder is heated.

4,354,630

PYRAMID CARTON CLOSURE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 10, 1980, Ser. No. 195,875
Int. Cl.³ B65D 5/10, 5/36
U.S. Cl. 229—39 R 8 Claims



5. An automatic lock bottom carton having a pyramid closure comprising:

a generally tubular side wall including alternately hingedly connected opposed side panels and end panels;

a plurality of generally triangular bottom panels hingedly connected to the bottom edges of each of said side and end panels of said side wall;

said plurality of bottom panels each having a tab, the tabs of said bottom panels connected to a first opposed pair of panels having central openings with inner peripheries which receive and enclose projecting lock tabs on a second alternately disposed opposed pair of said bottom panels;

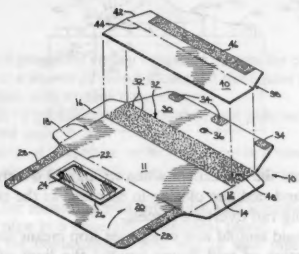
said second alternately disposed opposed pair of said bottom panels including second tabs for adhesive engagement with an adjacent one of said first opposed pair of panels.

4,354,631

RESEALABLE ENVELOPE

Mayne B. Stevenson, Park Ridge, Ill., assignor to Arvey Corporation, Chicago, Ill.

Filed Apr. 9, 1981, Ser. No. 252,447
Int. Cl.³ B65D *27/04, 27/06*
U.S. Cl. 229—71 3 Claims



1. A resealable envelope adapted for use with an automatic inserting machine, comprising:

a unitary sheet cut, scored and folded to define a rectangular central panel, a pair of side flaps respectively hinged to one opposed pair of edges of said central panel and folded over and against said central panel, a front panel hinged to one of the remaining opposed edges of said central panel and folded over and against said side flaps and adhered thereto and including a window therein for viewing the contents of said envelope, said central panel, side flaps, and front panel defining a pocket for the contents of the envelope, said unitary sheet further defining an outer sealing flap removably hinged to the remaining opposed edge of the central panel adapted to be folded over and adhered with adhesive means directly to a portion of said front panel disposed between said window and the remaining opposed edge of the central panel for initially sealing said envelope, said adhesive means accommodating detachment of said outer sealing flap from said front panel for opening said envelope without undue damage to said front panel, and

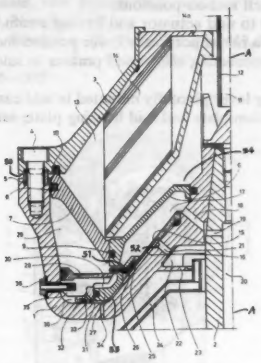
means for resealing the pocket after said outer sealing flap has been removed including an inner flap panel having an inner panel portion affixed to said central panel and an inner sealing flap hinged to said inner panel by a score line generally aligned with the remaining opposed edge of said central panel, said outer sealing flap being larger than said inner sealing flap whereby said inner sealing flap underlies said outer sealing flap when said outer sealing flap is adhered to said front panel, said inner sealing flap being adapted to be folded over and against said front panel and adhered directly thereto for resealing said envelope after said outer sealing flap has been opened and removed from said envelope, said outer sealing flap defining an opening which is adapted to provide communication between suction means of said automatic inserting machine and said inner sealing flap to permit said suction means to open both the inner and outer sealing flaps when the flaps are unsealed during automatic insertion of the contents to be placed in said envelope by said automatic inserting machine.

4,354,632

OPERATING SYSTEM FOR CENTRIFUGES

Klaus H. D. Stroucken, Ronninge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jun. 9, 1980, Ser. No. 157,525
Claims priority, application Sweden, Jun. 20, 1979, 7905419
Int. Cl.³ B04B *11/00*
U.S. Cl. 233—20 A 11 Claims



1. A centrifugal separator comprising a rotor mounted for rotation about an axis and forming a separating chamber having a central inlet for a liquid mixture of at least two components, said chamber also having a central outlet for a lighter separated component and peripheral outlets distributed around the rotor's periphery for a heavier separated component, an annular slide movable axially in the rotor during rotation thereof for opening and closing said peripheral outlets, the slide forming with the rotor a closing chamber communicating with a channel extending radially inward from the closing chamber, means for charging said channel to fill the channel and closing chamber with operating liquid actuating the slide hydraulically to a position for closing said peripheral outlets, a valve in the rotor for discharging operating liquid from the closing chamber, whereby the slide is pressed to a position for opening said peripheral outlets, and valve means operable for closing the connection between said channel and the closing chamber for retaining operating liquid in said channel and thereby maintaining the operating liquid pressure therein substantially unchanged, said valve means also being operable to eliminate the hydraulic pressure on the slide caused by operating liquid thus retained in the channel.

4,354,633

MANUAL MAIN SHUTOFF VALVE FOR A GAS BURNER COMBINATION CONTROL

Jesse H. Turner, Auburn, and Elmer E. Wallace, Fort Wayne, both of Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 7, 1981, Ser. No. 290,920
Int. Cl.³ G05D *73/12*
U.S. Cl. 236—1 H 3 Claims

1. In a combination control for a gas burner comprising a casing having an inlet, an outlet and a flow passage disposed between said inlet and said outlet; and further comprising a manual main shutoff valve, a thermostatic valve and a diaphragm valve located in said casing and serially connected in said flow passage for controlling as flow between said inlet and said outlet; an improved manual main shutoff valve construction comprising:

a partition plate defining part of said casing and having an annular valve seat portion located in said flow passage;

a valve member disposed in said flow passage; said valve member having an open position and having a closed position seated on said valve seat portion;

a valve operating stem axially movable within said casing and connected at one end to said valve member;

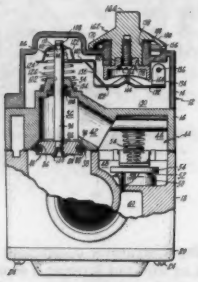
a spring acting upon the opposite end of said stem for biasing said valve member toward said valve seat portion;

a housing plate positioned in overlying relation to said partition plate;

a valve actuator rotatably carried on said housing plate and including a knob for manual rotation of said actuator between off and on positions;

a cam fixed to said actuator and having a cam surface consisting of a raised portion, a lower portion and an inclined portion connecting said raised portion to said lower portion; and

an operating lever pivotally mounted in said casing between said partition plate and said housing plate; said lever having an operating end operatively connected to said opposite end of said stem; said lever including a cam follower riding on said cam surface of said cam to effect pivotal movement of said operating end upon rotation of said actuator between said off and on positions; said cam follower being in engagement with said lower portion and said raised portion, respectively, of said cam surface when said actuator is in its off and on positions and riding on said inclined portion of said cam surface upon movement of said actuator between its off and on positions; said operating end of said lever being operatively connected to said opposite end of said stem to move said valve member to its open position when said actuator is rotated to its on position and to permit said spring to bias said valve member to its closed position when said actuator is rotated to its off position.



4,354,634

RAIL OVERTURN PREVENTION DEVICE

John A. Kasuba, Germantown, Tenn.; Graham M. Fee, Geneva, and Phillip M. Hoskins, Conneaut, both of Ohio, assignors to True Temper Railway Appliances, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 888,245, Mar. 20, 1978, abandoned. This application May 21, 1980, Ser. No. 152,133

Int. Cl.³ E01B *9/46*

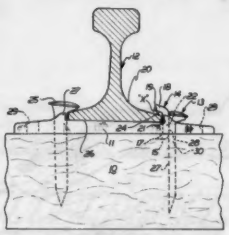
U.S. Cl. 238—338 **4 Claims**

1. A railway rail overturn prevention device for use as part of a railroad having a cross tie supporting a tie plate, said tie plate having at least one hole therethrough, and a rail having a base flange seated on the tie plate adjacent to the hole, the flange having an overturn path when the rail rotates about its length due to forces created by passing railway vehicles, the flange and tie plate defining a combined thickness, said device comprising a generally C-shaped clip having:

a first arm terminating in a catch means, said catch means being beveled to form a wedge for penetrating the tie and for engaging the tie at a distance below the tie plate when said device is installed in the tie plate;

a second arm spaced from and opposite to said first arm; and

a stem joining said first and second arms, said stem having a length spacing said arms by a distance exceeding said combined thickness and locating said second arm in the overturn path of the flange and said second arm being disposed in partially overlapping, spaced relation to said flange defining a gap therebetween when the device is installed, said gap being of a size sufficient to isolate said clip from the rail except when strong rail overturn forces occur and said gap closing in response to the occurrence of strong rail overturn forces;



wherein said second arm comprises stop means for restraining motion of said flange beyond the limit of said gap when said device is installed.

4,354,635

FLUIDIZED BED REACTOR WITH OPEN REACTION GAS INPUT AND METHOD OF INCREASING THE DUCT

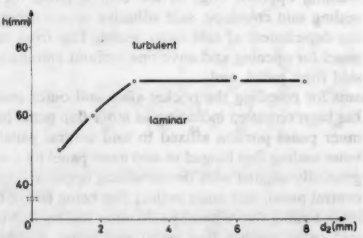
Eike Barnert, Jülich; Wolfgang Frommelt, Linnich, and Erich Zimmer, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Division of Ser. No. 85,780, Oct. 17, 1979, Pat. No. 4,259,925. This application Aug. 18, 1980, Ser. No. 178,785

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846160

Int. Cl.³ B05B *17/24*

U.S. Cl. 239—11 **1 Claim**



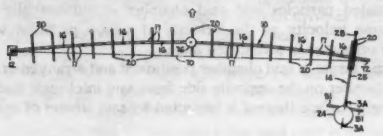
1. A method of achieving an increased rate of laminar gas flow in the limiting range for laminar gas flow in a straight terminal portion of an open-ended duct and the length of the laminar portion of a jet issuing therefrom, which consists of providing said terminal portion of said duct with subdividing walls for subdividing the interior thereof into a plurality of separate ducts of substantially equal cross sectional area over a straight terminal portion of said duct having a length (l) which is not less than 3% of the product ($Re \cdot d_2$) obtained by multiplying the diameter of one of the separate ducts (d_2) by the Reynolds number (Re) of the gas flow therein.

4,354,636

TORQUE DRIVEN ROTARY IRRIGATION SYSTEM

James M. Hait, 8047 Chardonay Ct., San Jose, Calif. 95135

Filed May 14, 1980, Ser. No. 149,813
Int. Cl.³ B05B 3/04
U.S. Cl. 239—177 8 Claims



1. A self-propelled rotary irrigation system for connection at one end to a source of water located at the center of an area to be irrigated, said system comprising:

a length of pipe for carrying water, said pipe having a longitudinal axis;

a plurality of irrigation outlets arranged in a spaced relationship along said length of pipe for discharging water therefrom;

means for mounting said pipe with said longitudinal axis of said pipe in a generally horizontal plane;

means for connecting a first end of said pipe to a water source in a manner such that the length of pipe is free to travel about said source and such that said first end is unable to rotate about the longitudinal axis of said pipe;

means for inducing a rotational torque about said longitudinal axis to said length of pipe at an opposite end from said first end whereby the degree of rotational displacement varies along the length of pipe; and

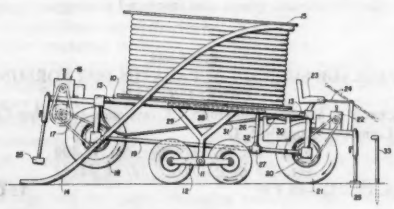
wheel means for supporting and advancing the pipe located at spaced intervals along the length thereof, said wheel means being responsive to the torque induced in the pipe to advance the pipe about the water source.

4,354,637

SELF-PROPELLED REVERSIBLE IRRIGATION MACHINE

Hubert Tidwell, 530 W. 200 South, Price, Utah 84501

Filed Jan. 23, 1981, Ser. No. 227,741
Int. Cl.³ B05B 3/18
U.S. Cl. 239—184 6 Claims



1. An irrigation machine comprising a wide stance carriage means, a rockable support frame on the carriage means extending forwardly and rearwardly of a transverse rocker axis on the carriage means, front and rear traction wheels on the rockable support frame on opposite sides of said rocker axis, power drive means on said support frame to drive both of the traction wheels in unison and in opposite directions, irrigation water delivery means on the support frame adapted for connection with a stationary source of water, an inclined front-to-rear track element on the support frame extending forwardly and rearwardly of said rocker axis, and a reversing weight engaged with the track element and adapted to travel rearwardly therealong under the influence of gravity following engagement of the weight with an abutment in the path of movement of the weight when the machine is traveling in one direction, the track element including a weight retaining portion near the forward end of the rockable support frame causing the weight to depress the front traction wheel of the machine and elevate the rear traction wheel.

4,354,638

SPIRAL ACTUATOR FOR AEROSOL POWDERED SUSPENSION PRODUCT

Jack Weinstein, Old Bridge, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,404
Int. Cl.³ B05B 7/32
U.S. Cl. 239—337 8 Claims

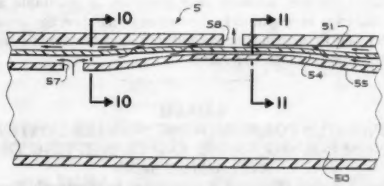
1. As an article of manufacture an aerosol container having incorporated therein under pressure particulate or powdered material suspended in a normally gaseous hydrocarbon propellant, said aerosol container being provided with a valve and an actuator; said actuator having a surface that engages said valve and a bore therethrough communicating at one end thereof with a fluid outlet in said valve, said actuator also being provided with an exit orifice; said actuator also being provided with a spirally shaped expansion chamber extending from said one end of said bore to said exit orifice whereby when said actuator is activated a controlled expansion of the propellant prior to entry of product into the ambient atmosphere is developed resulting in a low velocity spray with large particle size which tends to fall at a rapid rate rather than remain suspended in air.

4,354,639

MULTIPLE CHAMBER DRIP IRRIGATION HOSE

William M. Delmer, 16901 Bedford La., Huntington Beach, Calif. 92649

Continuation-in-part of Ser. No. 861,119, Dec. 16, 1977, Pat. No. 4,196,853. This application Feb. 5, 1980, Ser. No. 118,721
Int. Cl.³ B05B 15/06
U.S. Cl. 239—542 8 Claims



1. A multichamber drip irrigation hose for distributing irrigation water and the like in controlled amounts, comprising:

a primary and at least one secondary tube of flexible, water-impermeable material and joined at a common wall;

said common wall having a series of first holes placing the interior of said primary tube in communication with the interior of said secondary tube;

said secondary tube having a series of second holes leading

from the interior of said secondary tube to the exterior; and

a smooth, flexible, filamentary line of a material having a density approximately that of water and positioned within said secondary tube and forming a restricted path for water flowing from a first hole to a second hole, said line being of substantially smaller diameter than said secondary tube for movement of said line radially in said secondary tube.

4,354,640

ELECTROMAGNETICALLY ACTUATABLE VALVE

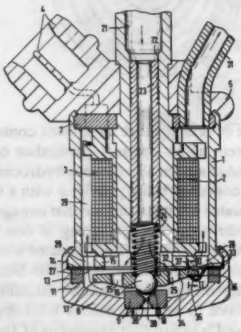
Waldemar Hans, Bamberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,129

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940239

Int. Cl.³ B05B *1/30, 1/32*

U.S. Cl. 239—585 **8 Claims**



1. In an electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines having a valve axis and including a housing, a flat armature firmly connected to a movable valve element arranged to cooperate with a fixed valve seat, first spring means for exerting a force in an axial direction on said armature, and electromagnetic means for exerting a force in an opposite direction on said armature when electrically energized, the improvement which comprises:

said flat armature, which further includes oppositely disposed first and second surfaces, said first surface including an edge remote from said valve seat; and

a further spring means for exerting a force on said second surface of said armature in the direction of said first surface edge, to hold said edge in contact with an adjacent fixed surface, wherein said armature is pivotable about said edge in response to the forces exerted on the armature by said first spring means and said electromagnetic means, to open or close the valve.

4,354,641

APPARATUS FOR REMOVING NO-BAKE COATINGS FROM FOUNDRY SAND AND CLASSIFYING THE RECLAIMED SAND

William J. Smith, Hazelton, Pa., assignor to Weatherly Foundry & Manufacturing Co., Weatherly, Pa.

Division of Ser. No. 15,206, Feb. 26, 1979, Pat. No. 4,283,015, which is a continuation-in-part of Ser. No. 847,749, Nov. 2, 1977, abandoned. This application Apr. 2, 1981, Ser. No. 250,238

Int. Cl.³ B02C *19/06*

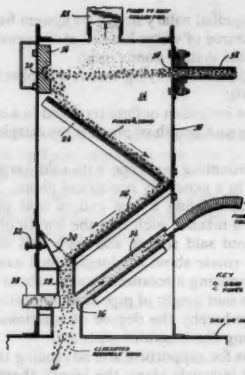
U.S. Cl. 241—40 **15 Claims**

1. In an apparatus for removing no-bake rigid coatings encasing no-bake foundry sand and separating the rigid coatings from the sand grains after the no-bake foundry sand has been comminuted to coated sand grain particle size, having means for fluidizing and conveying said sand grain size coated sand grains in a conduit to said apparatus at velocity just sufficient for pneumatic transport, the improvement comprising,

a chamber having a coated sand grain inlet thereto

said inlet arranged to direct a generally horizontal stream of coated particles into said chamber at substantially the same velocity as the velocity at which particles were transported in a fluidized state,

a rigid target in said chamber positioned and arranged in said chamber on the opposite side from said inlet such that the rigid surface thereof is impacted by said stream of coated



particles such that by the energy of impact the coatings are fractured and form a downwardly directed curtain of uncoated sand and fractured coatings lying between and below said inlet and said rigid target,

a vent from said chamber above said inlet for removing fine dust,

separator means in said chamber below said rigid target and inlet and arranged to receive said curtain of falling particles, for separating said sand grains and said fractured coatings, and

exit means from said separator for separately discharging the uncoated sand grains and fractured coatings.

4,354,642

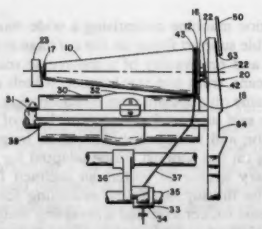
PACKAGE SUPPORT APPARATUS FOR FORMING A CREELING TAIL

Richard A. Schewe, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Sep. 24, 1979, Ser. No. 78,409

Int. Cl.³ B65H *54/02, 54/34, 54/42*

U.S. Cl. 242—18 PW **12 Claims**



1. A package support apparatus for use in a strand winding device to support a conical package core in association with a core-rotating frictional drive of said winding device, said coni-

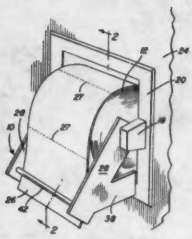
cal package core having an annular end portion proximate the large end of said core on the conical surface thereof, said package support apparatus comprising: supporting means having first and second spaced-apart members for supporting said core at respective ends of said core; and means for tilting said core between a creeling-tail-forming position and a package-winding position to permit selective engagement of only said end portion of said core with said frictional drive in said creeling-tail-forming position; said tilting means comprising an eccentric element associated with one of said members and rotatable about a center fixed with respect to said one member, said eccentric element having a core-mounting center displaced from said fixed center, said core-mounting center coinciding with the axis of said core when said core is mounted in said support means.

4,354,643

BATHROOM TISSUE HOLDER

Mary B. Kenner, 1 Mile Course, Kings Mill, Williamsburg, Va. 23185

Filed Nov. 18, 1980, Ser. No. 208,184
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.2 6 Claims



1. A holder for the free end of a paper web wound into a roll comprising a pair of generally parallel, spaced paper engaging members adapted to receive the free end of the paper web disposed generally in depending tangential relation to the roll to retain the free end of the paper web spaced from the roll and thus accessible for grasping by a person desiring to unwind the paper web from the paper roll and means supporting said paper engaging members to retain them generally in parallel relation to the longitudinal axis of the paper roll, said means supporting the paper engaging members including a pair of generally parallel, laterally spaced legs rigidly affixed to the ends of the paper engaging members and oriented in straddling relation to the paper roll for supporting engagement with the supporting structure for the paper roll, said legs extending downwardly and outwardly from the rotational axis of the paper roll, and support members fixedly secured to the outer end portions of the legs and extending inwardly to space the outer end portions of the legs and the paper engaging members away from a supporting surface for the paper roll.

4,354,644

REEL MOUNTING METHODS AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jul. 21, 1980, Ser. No. 170,370
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68.3 65 Claims

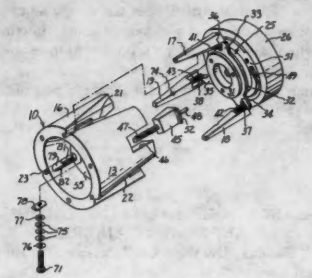
1. A method of releasably retaining a hollow-cylindrical member on a rotatable hub against forces tending to loosen said member, comprising in combination the steps of:

providing a wedge-shaped member for engaging said hollow-cylindrical member on the inside thereof;

providing said hub with a ramp for said wedge-shaped member;

placing said hollow-cyindrical member on said hub;

driving said wedge-shaped member up said ramp into engagement with the inside of said hollow-cylindrical member; and



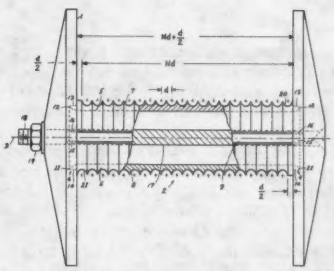
inhibiting any looseness between said releasably retained hollow-cylindrical member and the hub by urging said wedge-shaped member further up said ramp after engagement with the inside of said hollow-cylindrical member and continuously during rotation of said hub.

4,354,645

COLLAPSIBLE MANDREL FOR PRECISE WINDING OF A COIL

Xenophon Glavas, and Robert E. Thompson, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,949
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—117 30 Claims



1. A collapsible mandrel for precise winding of a material having a circular cross-section into a precision-wound coil comprising:

a pair of spaced parallel flanges;

a core upon which said coil is wound disposed between said pair of flanges perpendicular thereto, coaxial of a longitudinal axis and removably secured to said pair of flanges, said core including

a pair of hollow, partially semicircular members extending between said pair of flanges, each of said hollow members having a given arc length less than 180°, being disposed on a different side of said axis and having an outer surface containing therein a plurality of spaced grooves substantially parallel to said pair of flanges, each of said plurality of grooves having a radius substantially equal to the radius of said material, and

a pair of grooveless transition members extending between said pair of flanges, each of said transition members being disposed on a different side of said axis between adjacent ends of said pair of hollow members and

having a selected arc length equal to the difference between 180° and said given arc length;

a shaft disposed coaxial of said axis extending between said pair of flanges internally of said core, said shaft having a thread on one end thereof extending beyond one of said pair of flanges to receive a nut to releasably lock said core and said pair of flanges into a integral unit when said coil is being wound and to enable removal of said nut, said pair of flanges and said pair of transition members to permit removal of said pair of hollow members after said coil has been wound.

4,354,646

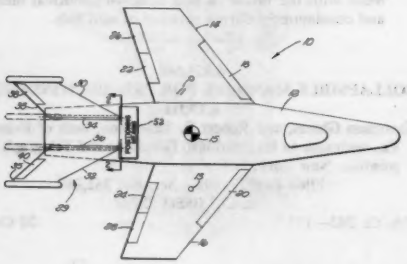
VARIABLE DIHEDRAL ANGLE TAIL UNIT FOR SUPERSONIC AIRCRAFT

Daniel P. Raymer, Del Aire, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 944,058, Sep. 20, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,387

Int. Cl.³ B64C *5/10, 9/08*

U.S. Cl. 244—87 **18 Claims**



1. In an aircraft capable of supersonic flight having a fuselage, and a pair of wings connected to said fuselage, each of said wings projecting substantially horizontally and outwardly from said fuselage, a variable dihedral angle tail unit comprising:

two tail control surfaces extending outwardly from said fuselage pivotally mounted to the upper body of the aft end of said fuselage about respective axes substantially parallel to the longitudinal axis of said fuselage, said tail control surfaces adapted to selectively provide both longitudinal and directional stability, said tail control surfaces being moveable within a range from a vertical position above said fuselage substantially parallel to the plane of symmetry of said aircraft to a predetermined minimum dihedral angle with respect to a horizontal plane passing through said axes; and

positioning means for rotating in unison said tail control surfaces about said axes.

4,354,647

MINIATURE COLLAPSIBLE KITE AND METHOD OF MAKING SAME

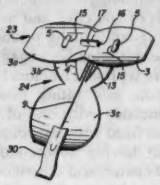
Lindell O. Carpenter, 522 Glen Oaks Blvd., Dallas, Tex. 75232

Filed Mar. 19, 1980, Ser. No. 131,634

Int. Cl.³ A63H *27/08*

U.S. Cl. 244—153 R **13 Claims**

1. A strip of thin continuous material for making a miniature kite which comprises a plurality of paper disks connected in serial fashion and adapted to fold one over another in accordian fashion until the entire assembly forms a thin generally circular package of a size on the order of a large monetary coin, and wherein one of said disks includes a punch thru yoke



structure that folds outward to provide a reinforced terminal to stabilize the kite in flight.

4,354,648

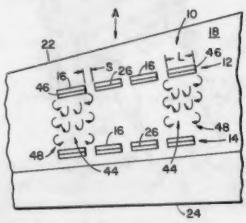
AIRSTREAM MODIFICATION DEVICE FOR AIRFOILS

Karl M. Schenk; Peter T. Reynolds; M. H. Abla, and Robert K. Wattson, Jr., all of Wichita, Kans., assignors to Gates Learjet Corporation, Wichita, Kans.

Filed Feb. 6, 1980, Ser. No. 119,068

Int. Cl.³ B64C *3/58, 21/10, 23/06*

U.S. Cl. 244—199 **17 Claims**



1. In an airstream flow modification device of the type secured to and extending beyond a normaly smooth contour surface of an aircraft airfoil to project into an airstream boundary layer and delay the onset of airstream flow separation from the airfoil while operating at higher aircraft speeds at Mach numbers of about 0.6 to about 0.9 when the airstream near the airfoil accelerates to supersonic speeds, the improvement comprising:

a plurality of spaced, generally rod shaped elements arranged generally end to end in at least one row and extending from said airfoil surface, each element having a height less than the boundary layer thickness formed at said aircraft speeds and a length oriented generally normal to the airstream flow within a range of about −30 degrees to about +30 degrees from a normal to the airstream flow.

4,354,649

ARRANGEMENT FOR CONTINUOUSLY CONTROLLING TRACK-BOUND VEHICLES

Eduard Murr, Kirchseeon; Siegfried Gersting, Munich; Helmut Übel, Leonberg, and Alan C. Knight, Korntal-Müchingen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,389

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901994

Int. Cl.³ B61L *3/00, 21/00*

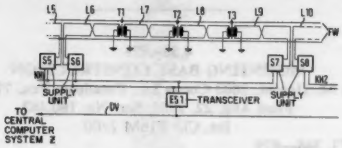
U.S. Cl. 246—187 B **6 Claims**

1. An arrangement for continuously controlling track-bound vehicles on a track divided into individual areas comprising:

in each of said areas at least one track-conductor loop having N transpositions therein, where N is an integer greater than two, said one loop communicating data between said

vehicles and a fixed control station by being coupled at opposite ends thereof to a different one of two supply units coupled to said control station and by being inductively coupled to communicating equipment on said vehicles, said two supply units feeding said data to said opposite end of said one loop substantially in phase; and

coupling elements disposed in said one loop intermediate adjacent ones of said N transpositions to subdivide said one loop into N track-conductor loops.



4,354,650

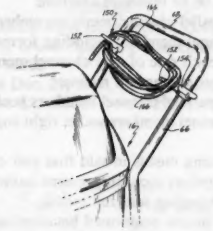
POWER CORD STORAGE DEVICE

Dale E. Lowder, North Muskegon, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 110,010, Jan. 7, 1980, which is a division of Ser. No. 847,905, Nov. 2, 1977, Pat. No. 4,222,145. This application Mar. 18, 1981, Ser. No. 245,026

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—49 **2 Claims**



1. A power cord storage device for electrically powered apparatus comprising:

a generally U-shaped control handle for controlling said electrically powered apparatus;

a pin extending radially outwardly from one leg of said handle;

a pivot arm rotatably supported on said handle, said pivot arm including a hub portion defining a L-shaped slot within which said pin extends; and

an other arm secured to the other leg of said handle, said pivot arm being rotatable to a first position so that said pin may be positioned in one leg of said slot and the power cord may be wrapped around said arms, and said cord being released by shifting said hub of said pivot arm to place said pin in the other leg of said slot and rotating said pivot arm towards said other arm.

4,354,651

CABLE GROMMET WITH TENSION RELIEF

Hans Simon, Bruchhausener Strasse, 5463 Unkel, Fed. Rep. of Germany

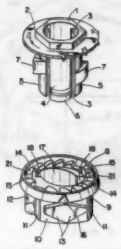
Filed Oct. 26, 1978, Ser. No. 954,827

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822643

Int. Cl.³ F16L *5/00*

U.S. Cl. 248—56 **16 Claims**

1. A two-part strain relief cable grommet for securing cables in an opening in a carrier member including a tubular outer body member and a tubular inner member coaxially telescopically engagable and rotatable one within the other, said outer body member being insertable in said opening, said outer body member having less axial extent than said inner body member and having an inner wall surface defining an inner opening having a plurality of spaced corners, said inner body member including a generally tubular portion divided by axial slits extending over part of its length forming a plurality of segmental jaws terminating in free ends, a gradually circumferentially



increasing projection disposed on respective surfaces of two oppositely facing jaws at a location spaced inwardly from their free ends engagable against the inner wall surface of said outer body member, so that upon relative rotation of said members, said two jaws move inwardly towards one another to engage a cable guided through said inner member and with at least one other jaw having a holding lug projecting outwardly from its free end thereof and engagable with an end portion of said outer body member to hold said body members together.

4,354,652

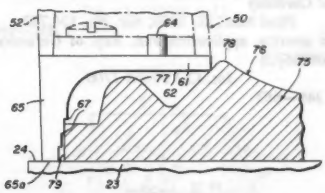
SENSOR MOUNTING ASSEMBLY

Ronald J. Zegarski, Crystal Lake; Philip J. Burnstein, Skokie, and George R. Pariza, Batavia, all of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Jun. 11, 1980, Ser. No. 158,357

Int. Cl.³ F16M *11/00*

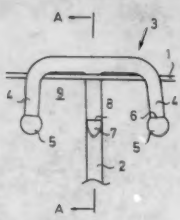
U.S. Cl. 248—201 **15 Claims**



1. An adapter bracket for mounting a sensing component of an alarm system in a predetermined orientation adjacent to the inner edge of a door or window having a substantially planar first outer surface, a frame being attached to the first outer surface and having a second outer surface, said bracket comprising a support member having a flat planar support surface adapted for receiving the associated sensing component thereon and having a first bearing surface adapted for engagement with the second outer surface, a positioning flange on said support member and extending from said first bearing surface along one edge thereof, the outer end of said positioning flange having a second bearing surface generally parallel to said support surface and adapted for abutting engagement with the first outer surface, and a plurality of steps formed on one side of said positioning flange and each having first and second intersecting surfaces, each of said first surfaces being substantially parallel to said support surface and providing a surface along which said positioning flange can be cut to provide a

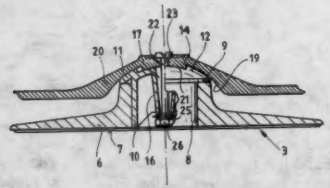
new second bearing surface thereby to control the length of said positioning flange.

4,354,653
SUSPENSION DEVICE
Göte Ericsson, Stora Hestra, 330 27 Hestra, Sweden
Filed Feb. 19, 1980, Ser. No. 122,653
Int. Cl.³ A47H 1/10
U.S. Cl. 248—317 10 Claims



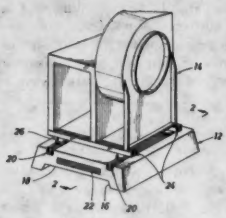
1. A device for attaching an article to a line, such as a clothes line, comprising a main leg adapted at one end to engage one side of said line and having a depending portion with a protuberance spaced from said one end, a pair of auxiliary legs extending in opposite directions from said one end of the main leg with each auxiliary leg having a downturned end portion with a protuberance, the protuberance on the main leg having at least one laterally-extending portion and the protuberances on the auxiliary legs each having laterally-extending portions directed toward the protuberance on the main leg so that when the device is mounted on a line with the main leg engaging one side of the line and the auxiliary legs engaging the opposite side of the line, the protuberances cooperate to resist accidental detachment of the device from the line.

4,354,654
SWIVEL MOUNTING UNIT
Franz Werner, Paderborn-Wewer; Rudolf Schmeykal, Neuenbeken, and Herman Doeinghaus, Delbrueck-Hagen, all of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 134,782
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 7909786[U]
Int. Cl.³ F16M 1/00
U.S. Cl. 248—663 7 Claims



1. A swivel mount for apparatus such as a projector adapted for angular adjustment about a vertical axis and adjustment of inclination from horizontal characterized by:
- a foot plate having a vertically cylindrical opening therein;
- a bearing element having a hollow cylindrical portion mounted in said opening of said foot plate for angular movement about a vertical axis relative to said foot plate and having an upper convex spherical support surface with a guide slot therein, and
- a step bearing adapted to mount apparatus and having a concave under surface disposed in mating frictional engagement with said spherical support surface and further having a guide arm disposed in said guide slot to limit angular tilting or inclination of said apparatus to a single plane.

4,354,655
MOUNTING BASE CONSTRUCTION
Erwin M. Hengst, 2603 Cocoa La., Pasadena, Tex. 77502
Filed Aug. 22, 1980, Ser. No. 180,462
Int. Cl.³ F16M 1/00
U.S. Cl. 248—679 8 Claims



1. Apparatus for mounting equipment, including:
- base means cast from a moldable weatherproof material, said base means being of sufficient mass to act as a stabilizing base for equipment to be mounted thereon;
- a first pair of parallel channel members embedded in said cast base, said channel members including formed over edges at the top of on each side of said channel members to provide downwardly projecting rail means;
- a second pair of parallel channel members positioned over said first pair of channel members and at right angles with respect thereto;
- equipment mounting means in said first pair of channel members, said equipment mounting means having slide portions for matingly engaging said rail means;
- motion isolation means positioned between said first and second pair of parallel channel members, said motion isolation means being a resilient member having an aperture therethrough; and
- bolt means positioned through the bottom of said second channel members, through the aperture in said resilient member, and into holding connection with said equipment mounting means.

4,354,656
SUSPENSION IDLER MOLD APPARATUS
Arthur F. Kain, 1726 Virginia Ct., Lakeland, Fla. 33803
Continuation-in-part of Ser. No. 174,750, Aug. 4, 1980, Pat. No. 4,301,109. This application Jul. 15, 1981, Ser. No. 283,726
Int. Cl.³ B29C 1/00, 6/00
U.S. Cl. 249—78 16 Claims

1. A vertical mold apparatus for molding a suspension idler, or the like, comprising in combination:
- a base;
- a vertical mold having a pair of hinged mold portions having a mold cavity formed therein, one said mold portion being attached to said base;
- an upper and lower shaft positioning and support means attached to one mold portion for supporting a shaft having an anchor formed on one end thereto and protruding into said mold cavity; and
- said mold cavity having a plurality of roller cavity portions connected by a plurality of connecting shaft cavity portions, said roller cavity portions having an angled surface

from the perimeter thereof to said shaft cavity portions on either side thereof to prevent entrapment of air during

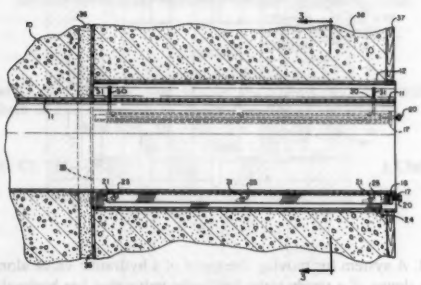
vertical molding, whereby a suspension idler can be molded of a polymer without a cable therein.

4,354,657

SUPPORTS FOR COAXIAL CONDUITS

John E. Karlberg, c/o J. Karlberg Associates, P.O. Box 58, Wycombe, Pa. 18980

Filed Dec. 29, 1980, Ser. No. 220,839
Int. Cl.³ B28B 7/16; B29C 1/00
U.S. Cl. 249—83 9 Claims



1. Apparatus for supporting an exteriorly disposed sleeve member in a fixed interiorly disposed hollow cylindrical member which comprises

a plurality of axially disposed longitudinally extending support bars for engagement with one of said cylindrical members,

a plurality of interposed bars each cooperating with a pair of said support bars so as to be movable radially with respect to one of said cylindrical members to adjust the spacing of said cylindrical members,

said support bars and said interposed bars being disposed at at least three radial locations relative one said cylindrical member for adjusting the spacing of said cylindrical members, and

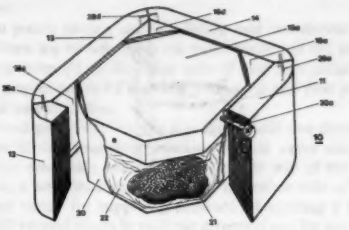
members exteriorly accessible at the ends of said support bars for separately adjusting said support bars and said interposed bar.

4,354,658

HOT TOP CONSTRUCTION

Jan Odsvall, Tyresö, Sweden, assignor to AB Indesko, Stockholm, Sweden

Filed Nov. 28, 1980, Ser. No. 210,897
Claims priority, application Sweden, Dec. 6, 1979, 7910050
Int. Cl.³ B22D 7/10
U.S. Cl. 249—202 15 Claims



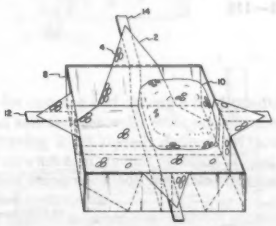
1. A hot top construction comprising a plurality of walls of insulating fibrous material, arranged vertically in relation to one another for insertion into an ingot mould to cover the walls of the upper part of the mould, said walls of the hot top construction defining an inner cavity which has upper and lower open ends, an upper confinement member of insulating fibrous material mounted at said open upper end, at least one combustible container containing an additive to be supplied to the melt during casting, and means securing said container below said upper confinement member in said cavity to form an assembled unit adapted to the dimensions of the ingot mold.

4,354,659

LIGHT WEIGHT INGOT MOLD MAT

Herbert A. White, Jr., Churchill Borough, Pa., assignor to American General Supply Company, Pittsburgh, Pa.

Filed Oct. 6, 1980, Ser. No. 194,372
Int. Cl.³ B22D 7/12
U.S. Cl. 249—206 9 Claims

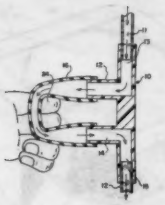


1. A light weight ingot mold mat for receiving molten metal comprising a plurality of crumbled thin sheets each made from a metal compatible with the molten metal and having closely spaced holes therein throughout substantially all its surface, said sheets being arranged in a plurality of layers arranged to define a honeycombed spongelike structure of considerable thickness defining a plurality of discontinuous voids, and substantially flat individual thin sheets arranged on the top and bottom of said spongelike structure to form an assembly, said top and bottom sheets being made from a metal compatible with the molten metal, none of said discontinuous voids extending from the top sheet to the bottom sheet.

4,354,660
IN-LINE FLOW CONTROL CLAMP

James A. Stupar, Waukegan, and Stephen D. Smith, McHenry, both of Ill., assignors to Baxter Travenol Laboratories Inc., Deerfield, Ill.

Filed Feb. 2, 1981, Ser. No. 230,194
Int. Cl.³ F16L 55/14
U.S. Cl. 251—4 7 Claims



1. A clamp comprising:

a flow directing member, portions of said member defining a first opening through which a fluid can be delivered into the clamp and a second opening out of which the fluid can be directed from the clamp, said openings being axially aligned;

inlet and outlet means in said flow-directing member;

means within said flow-directing member for internally blocking the flow of fluid directly and axially between said openings;

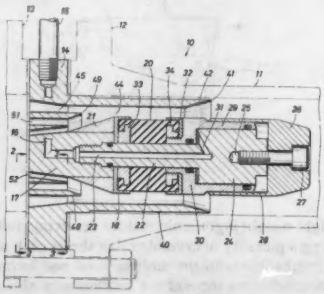
resilient sealing means connected to said inlet and outlet means in bypassing relation around said internally blocking means; and

a crimped area within said resilient sealing means which prevents fluid flow through said sealing means, said crimped area spontaneously springing shut to a closed crimped state unless manually uncrimped, and said crimped area being capable of being uncrimped, to permit fluid flow through said clamp.

4,354,661
CONSTANT VELOCITY DIFFUSER

Robert H. Welker, P.O. Box 138, Sugar Land, Tex. 77478

Filed Nov. 10, 1980, Ser. No. 205,287
Int. Cl.³ F16K 31/12
U.S. Cl. 251—118 9 Claims



1. A gas line flow regulator which comprises:

(a) a flange supported, radially extending disk located within a pipeline having upstream and downstream faces thereon;

(b) a centrally positioned means supported by said disk on the upstream side thereof, said means including:

1. an elongate centered body;

2. a resiliently expandable means supported by said body having a relaxed and expanded condition wherein the expanded condition is accompanied by a radial outward expansion of said expandable means, and wherein said expandable means further includes;

3. an exposed outer sealing surface thereon;

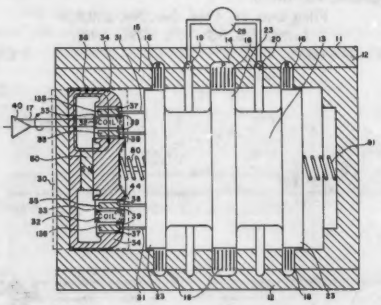
(c) a sleeve supported by said disk on the upstream side thereof, said sleeve surrounding said expandable means to define an annular flow space therebetween variably constricted by said expandable means on expanding and said sleeve further including an encircling tapered surface terminating at a leading edge for directing flowing gas in laminar flow into said annular flow space; and

(d) said disk extending across the annular flow space and terminating said flow space and having openings therethrough, there being a first opening means for directing flowing gas in a first direction downstream from said disk and a second opening means therethrough for directing flowing gas in a second direction downstream from said disk.

4,354,662
FORCE MOTOR

Thomas W. Thompson, Concord, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 30, 1980, Ser. No. 145,152
Int. Cl.³ F16K 31/08, 7/16, 47/02
U.S. Cl. 251—129 7 Claims



1. A system for moving the spool of a hydraulic valve along the sleeve of a single-stage hydraulic valve that has hydraulic fluid input and return ports, said system comprising:

(a) a first stationary magnetic material;

(b) a second stationary magnetic material, said second material is coupled to said first material in such a manner that a space exists between said first and second materials;

(c) a permanent magnet which is coupled linearly to said first and second stationary material;

(d) a coil of wire that is coupled to electrical input signals, said coil of wire is positioned within said space;

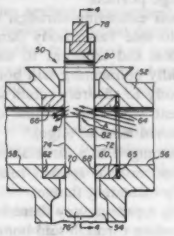
(e) a first ring that is positioned on the outside of said coil; a second ring that is positioned on one of the sides of said coil, opposite said first ring; and a plurality of support members that connect said first and second rings to said spool;

whereby if an electric input signal is present on said coil a magnetic force will be produced on said coil and said magnet causing said first and second ring to move in an amount proportional to said input signal.

4,354,663
VALVE CONSTRUCTION FOR SAND AND SLURRY SERVICE

Ralph W. Vanderburg, and Jerome E. Corneillie, both of Longview, Tex., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,711
Int. Cl.³ F16K *25/04, 3/00*
U.S. Cl. 251—210 7 Claims



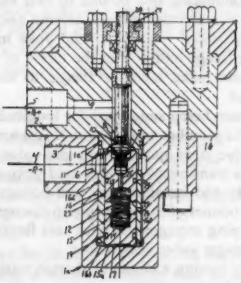
1. In a gate valve wherein a ported gate element having a generally circular gate port is movable between circular valve seats positioned within a valve chamber to control the flow of fluid through flow passages defined by the valve, the improvement comprising:

said gate port and the upstream one of the valve seats being of cooperative configuration at the initial stage of opening movement of said gate and at the terminal stage of closing movement of said gate to define an upstream flow path of greater dimension as compared to the flow path established by the relationship of the gate portion and the downstream seat, whereby the velocity of fluid flowing through the upstream flow path and impinging upon the downstream seat will be of lower velocity as compared to the velocity of flow through the downstream flow path, thereby minimizing erosion of the downstream seat by erosive particulate entrained within the flowing fluid.

4,354,664
FAIL-SAFE VALVE

Dan G. Taylor, Erie, and Walter W. Robertson, Cranesville, both of Pa., assignors to Hydro-Pac, Inc., Fairview, Pa.

Filed Dec. 10, 1980, Ser. No. 215,001
Int. Cl.³ F16K *1/32*
U.S. Cl. 251—282 1 Claim



1. A valve for controlling the flow between pressures P1 and P2 comprising

a first body having a connection to P1 and a second body having a connection to P2, said bodies being in direct contact with each other and capable of being turned relative to each other to provide different orientations of the connections to P1 and P2, means for bolting the bodies together, a flow path between said connections, a port in the second body in said flow path, a valve member for opening and closing said port, means for closing the valve comprising first and second pistons for exerting a force on said valve member in one direction to close said port, a sleeve in said first body having its upper end communicating with P1 and surrounding said port and said pistons, said pistons being slidable in said sleeve, a seal between each piston and said sleeve below the upper end of the sleeve,

said first piston having one side facing said one direction, a way from top to bottom in the outer surface of the sleeve leading from P1 to the other side of said first piston for supplying pressure P1 exerting a force on said first piston in said one direction,

said second piston having one side facing said one direction and in force transmitting relation to said valve member and the other side presented to said one side of the first piston, a way leading from P2 to the other side of said second piston for supplying pressure P2 exerting a force on said second piston in said one direction and for exerting a force on said one side of the first piston in the opposite direction,

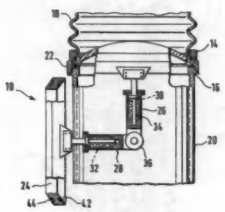
means for opening the valve,

and a force transmitting biasing means between said pistons for transmitting forces from one piston to the other.

4,354,665
VALVE FOR OPENING AND CLOSING A FLUID CONDUIT

Leon Ulveling, and Pierre Mailliet, both of Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 5, 1980, Ser. No. 156,757
Claims priority, application Luxembourg, Jun. 15, 1979, 81386
Int. Cl.³ F16K *1/18*
U.S. Cl. 251—298 5 Claims



1. A valve for opening and closing a fluid conduit, the conduit having an axis and generally wide cross-section, the conduit further having a slit therein defined by facing ends of upstream and downstream conduit portions, at least one of said conduit portions being relatively movable with respect to the other, the valve comprising:

a moveable shut-off member, said shut-off member having a spherical shape and a pair of peripheral sealing surfaces, said sealing surfaces comprising sealing ring means carried by said member, said sealing ring means being in registration on oppositely disposed sides of the member;

means supporting said shut-off member for movement with respect to the conduit axis and through said slit, said supporting means comprising a first pair of oppositely situated telescopic arms, first ends of said arms of said first pair being coupled to said shut-off member;

a moveable apertured member spaced from said moveable shut-off member, said apertured member defining a spherical shape having the same radius as said shut-off member, said apertured member further having a pair of peripheral sealing surfaces with the same circumference as the sealing surfaces of said shut-off member, said sealing surfaces

of said apertured member comprising sealing ring means carried by said member, said sealing ring means being in registration on oppositely disposed sides of said apertured member;

means supporting said apertured member for movement with respect to the conduit axis and through said slit, said apertured member supporting means comprising a second pair of oppositely situated telescopic arms, first ends of said arms of second pair being coupled to said apertured member; and

drive means engaging said arms of said first and second pairs adjacent the second ends thereof, said drive means imparting arcuate motion to said shut-off and apertured members about a common axis whereby fluid flow through the conduit will be prevented when said shut-off member is positioned in the conduit slit with its peripheral sealing surfaces in registration with the facing ends of the upstream and downstream conduit portions and fluid flow through the conduit will be permitted when apertured member is positioned in the conduit slit with its peripheral sealing surfaces in registration with the facing ends of the upstream and downstream conduit portions.

4,354,666

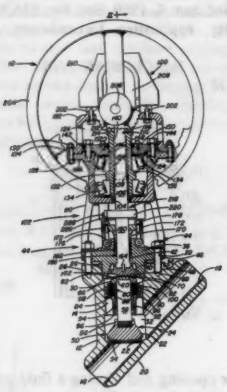
HIGH PRESSURE PACKLESS METAL DIAPHRAGM VALVE

Joseph P. McHale, Allison Park, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,888

Int. Cl.³ F16K *31/50*

U.S. Cl. 251—335 A **15 Claims**



1. A diaphragm valve comprising,

a valve body having a chamber therein with an upper portion and a lower portion,

said valve body having an exterior flange portion extending radially from said chamber upper portion and an internal annular edge positioned in said chamber upper portion,

said lower portion having inlet and outlet openings communicating with said chamber lower portion,

a valve seat in said chamber lower portion between said inlet and outlet openings,

a valve member positioned for axial movement in said chamber lower portion in overlying relation with said valve seat to control the flow of fluid through said chamber lower portion between said inlet and outlet openings,

a flexible diaphragm positioned in said chamber in overlying with said valve member and supported by said valve body internal annular edge,

said flexible diaphragm being arranged to seal said chamber lower portion from said chamber upper portion, said flexible diaphragm having a top surface and a bottom surface,

said valve member being positioned in abutting relation with said diaphragm bottom surface,

a bonnet positioned in said chamber upper portion in overlying abutting relation with said flexible diaphragm on said valve body internal annular edge, said bonnet having a radially extending flange portion positioned above said valve body flange portion,

first fastener means extending through said bonnet flange portion and into said valve body flange portion in surrounding relation and adjacent to said chamber upper portion for rigidly connecting said bonnet flange portion to said valve body to securely retain said bonnet in gripping engagement with said flexible diaphragm on said valve body internal annular edge,

said bolts being arranged in a circular pattern around said bonnet flange portion in spaced relation to said yoke member radially extending flange,

said bonnet having a passageway therethrough,

a valve stem extending through said bonnet passageway for longitudinal movement relative thereto,

said valve stem having a lower end portion abutting said diaphragm top surface and an upper end portion,

actuator means connected to said valve stem upper end portion for moving said valve stem to transmit movement through said flexible diaphragm to said valve member for closing and opening said valve,

a yoke member positioned in surrounding relation with said bonnet and said valve stem between said valve body and said actuator means,

said yoke member having an upper end portion and a lower end portion,

said yoke member lower end portion having a radially extending flange positioned in overlying abutting relation with said valve body exterior flange portion, said yoke member flange being positioned in spaced surrounding relation with said bonnet flange portion,

second fastener means including bolts for connecting said yoke member radially extending flange to said valve body exterior flange portion, said bolts being arranged in a circular pattern adjacent the outer periphery of said valve body exterior flange portion,

said bonnet being positioned concentrically within said yoke member and removable from connection with said valve body relative to said yoke member which remains connected to said valve body to permit replacement of said flexible diaphragm in said chamber,

said bolts connecting said bonnet to said valve body being arranged in a circular pattern around said bonnet flange portion in spaced relation to said yoke member radially extending flange and within the circle of said bolts connecting said yoke member flange to said valve body flange, and

said valve stem being supported for longitudinal movement in said yoke member so that stem thrust applied upwardly to said valve stem upon closing said valve member under pressure is transmitted through said yoke member to said valve body and isolated from said bonnet to thereby relieve said bonnet of forces acting to disengage said bonnet from gripping engagement with said flexible diaphragm.

12. A diaphragm valve comprising,

a valve body having a chamber therein with an upper portion and a lower portion,

said lower portion having inlet and outlet openings communicating with said chamber lower portion,

a valve seat in said chamber lower portion between said inlet and outlet openings,

a valve member positioned for axial movement in said chamber lower portion in overlying relation with said valve seat to control the flow of fluid through said chamber lower portion between said inlet and outlet openings,

a flexible diaphragm positioned in said chamber in overlying

relation with said valve member and arranged to seal said chamber lower portion from said chamber upper portion,
said valve body having a diaphragm seat surrounding said chamber upper portion,
said flexible diaphragm having an annular edge portion supported by said diaphragm seat to position said flexible diaphragm in said chamber,
said diaphragm seat having a plurality of recesses forming a roughened surface with a preselected degree of roughness to increase the sealing engagement of said diaphragm annular edge portion with said diaphragm seat,
a compressible gasket fabricated of graphite and positioned on said diaphragm seat roughened surface,
said gasket having a ring-like structure of a preselected width,
said gasket including a lower surface extending along the entire width thereof in overlying abutting relation with said diaphragm seat roughened surface,
said gasket including an upper surface extending along the entire width thereof in underlying abutting relation with said diaphragm annular edge portion,
said gasket being compressed along the entire width thereof between said diaphragm seat roughened surface and said diaphragm annular edge portion,
a bonnet positioned in said chamber upper portion in overlying relation with said diaphragm,
said bonnet having a passageway therethrough,
a valve stem extending through said bonnet passageway for longitudinal movement relative thereto, said valve stem having a lower end abutting the top surface of said diaphragm and being operable to transmit movement through said diaphragm to said valve member for opening and closing said valve,
said bonnet having a lower annular end portion extending into said chamber upper portion and positioned in abutting relation with the top surface of said diaphragm annular edge portion,
said bonnet lower annular end portion exerting a downward bearing force upon said diaphragm annular edge portion to, in turn, compress said graphite gasket into frictional engagement with said diaphragm seat roughened surface, and
said graphite gasket being composed of fibers being compressed into the recesses of said diaphragm seat roughened surface upon compression of said gasket to engage said fibers on said gasket upper surface to said diaphragm annular edge portion and to engage said fibers on said gasket lower surface to said diaphragm seat roughened surface to lock in sealing engagement said diaphragm to said gasket and said gasket to said diaphragm seat roughened surface and prevent movement of said diaphragm on said diaphragm seat roughened surface.

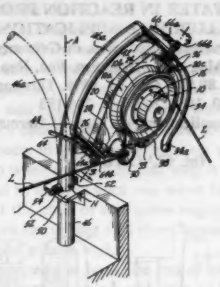
4,354,667

CRAB POT LINE HAULER

Robert A. Svendsen, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Jun. 13, 1979, Ser. No. 48,059
Int. Cl.³ B66D *1/08*
U.S. Cl. 254—332 **23 Claims**

1. A line hauler for hauling crab pots and the like on a fishing vessel, comprising a sheave assembly that includes a power-driven V-grooved hauler sheave and associated sheave drive motor and line guide means mounted together as a unit in cooperable relationship on a common support permitting driven rotation of said sheave by said motor about a sheave axis, a structural base adapted for mounting said common support with the sheave assembly in operative position on a fishing vessel, said base having pivot bearing means fixed thereon and mounting said support to permit said sheave assembly to pivot freely about a fixed pivot axis extending transverse to the sheave axis while restraining the support against other bodily motion relative to said base, said pivot axis being



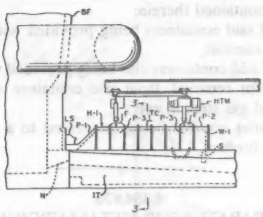
angled to the vertical, and the sheave assembly being formed with its center of mass offset downwardly from said pivot axis.

4,354,668

METHOD AND APPARATUS FOR DETERMINING COMPLETION OF A CAST IN BLAST FURNACE CASTHOUSE POLLUTION SUPPRESSION SYSTEM

Donald M. Ernst, Chicago, Ill., assignor to Jones & Laughlin Steel Incorporated, Pittsburgh, Pa.

Filed Aug. 20, 1981, Ser. No. 294,663
Int. Cl.³ C21B *7/12*; B22D *39/00*
U.S. Cl. 266—45 **8 Claims**



1. A method of operating a blast furnace having a hood covering its taphole during casting, which method comprises:
sensing, with the hood in place, when the level of molten material does not fill the vertical cross-section of the taphole; and
removing said hood before the furnace casts dry.

5. A method of operating a blast furnace having a hood covering its taphole, which method comprises:
(a) measuring and recording the temperature inside said hood;
(b) purposefully casting said furnace dry during a number of casts to provide a temperature profile for said hood in conjunction with said blast furnace,
(1) said profile including a representative plateau temperature range inside said hood reached during full flow of molten material through said taphole
(2) said profile also including a representative dry-cast temperature range in said hood reached when said blast furnace is cast dry; and
(c) removing said hood during subsequent castings of said blast furnace when the temperature inside said hood is above a plateau temperature in said profile and below a dry-cast tap temperature in said profile.

4,354,669

APPARATUS FOR REGULATING THE QUANTITIES AND PERCENTAGES OF THE GASEOUS CONSTITUENTS OF OXYGEN, NITROGEN, CARBON DIOXIDE AND WATER IN REACTION PROCESSES IN METALLURGICAL APPLICATIONS

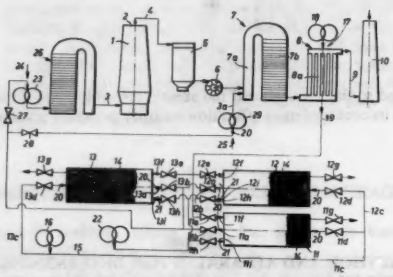
Günter Ratschat, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Division of Ser. No. 89,977, Oct. 31, 1979. This application Feb. 20, 1981, Ser. No. 236,155

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911763

Int. Cl.³ C21B *9/14*

U.S. Cl. 266—140 **12 Claims**



1. An apparatus for regulating the absolute amount of oxygen and relative percentages of individual gaseous constituents of a gas stream provided to a metallurgical reaction furnace, comprising:

(a) at least one container;

(b) each of said containers having molecular screening substances contained therein;

(c) each of said containers being provided with an ambient air inlet conduit;

(d) each of said containers also being provided with an outlet conduit for removal, from said container, of an oxygen enhanced gas stream; and

(e) said outlet conduit being connected to a metallurgical reaction furnace.

4,354,670

LINING APPARATUS FOR METALLURGICAL VESSELS, PARTICULARLY FOR STEEL MILL CONVERTERS AND/OR BLAST FURNACES

Gerhard Eichbaum, and Wolfgang Heidemann, both of Duisburg, Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,896

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921538

Int. Cl.³ C21B *7/04*

U.S. Cl. 266—281 **15 Claims**

1. A lining apparatus for metallurgical vessels having an upper portion and a lower portion, said lower portion having a bottom opening spaced above a mill floor, which apparatus comprises

(a) a working platform,

(b) platform elevator means for supporting said platform above the mill floor and varying its height between selected positions within the vessel and a position beneath the bottom opening of the vessel,

(c) a generally horizontally extending brick conveyor line,

(d) a generally vertically extending brick conveyor line for transporting bricks from below the vessel to the working platform,

(e) the length of said horizontally extending brick conveying means being independent of the height of said vertically extending brick conveying means,

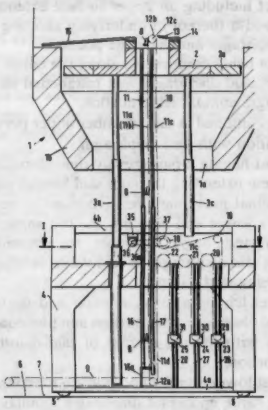
(f) said vertical conveyor line comprising endless chain means supported by a plurality of sprocket wheel means including upper sprocket wheel means, lower sprocket wheel means, reel-off sprocket wheel means including at least one storage sprocket wheel means,

(g) sprocket wheel support means supporting said sprocket wheel means in a predetermined configuration together with said chain means defining

(1) a vertical brick delivery course extending from said lower to said upper delivery sprocket wheel means,

(2) a reel-off course extending from said upper delivery sprocket wheel means, said reel-off course including at least three reel-off course sprocket wheel means,

(3) a reel-on course extending from the last of said reel-off course sprocket wheel means to said lower delivery sprocket wheel means,



(h) means for varying the length of said vertical brick delivery course by varying the separation of said upper and lower delivery sprocket wheel means, the height of said vertical brick delivery course being adapted to be coordinated with the height of said working platform,

(i) said at least one storage sprocket wheel means being positioned in opposed relationship with two sprocket wheel means,

(j) guide means supporting at least one of said storage sprocket wheel means or said opposed sprocket wheel means for limited predetermined displacement to vary the distance between said storage sprocket wheel means and the opposed sprocket wheel means selectively to increase and to decrease the length of chain in the reel-off course and corresponding selectively to decrease and to increase the height of the brick delivery course,

(k) brick support means attached to the chain means in a manner whereby said brick support means clear the sprocket wheel means.

4,354,671

SHEET HANDLING DEVICE

Paul W. Bergland, Sparta, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.

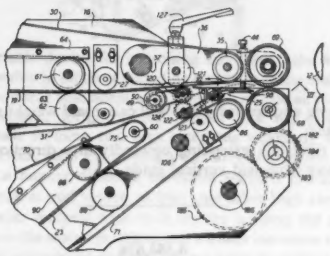
Continuation-in-part of Ser. No. 127,142, Mar. 4, 1980. This application Mar. 31, 1981, Ser. No. 249,678

Int. Cl.³ B65H *39/06*

U.S. Cl. 270—58 **7 Claims**

1. In a sheet handling device for receiving a flow of sheets at a given speed of travel from a discharge end of a processing apparatus and discharging the sheets in superimposed pairs of sheets to an input station of a second apparatus, said device

having a frame with an input end and an exit end; first means for forming a first path between said input and exit ends; second means for forming a second path extending between the input and exit ends, said second path being longer than said first path by an amount equal to approximately one-half the spacing between the leading edges of two successive sheets in said flow of sheets in said processing apparatus and having a portion merging with the first path adjacent the exit end wherein a sheet in the second path is deposited on a following sheet traveling in the first path to form the superimposed pair of sheets for discharge from the exist end, each of said means including coacting belts; and means for selectively directing sheets into said first and second paths, each of said first and second means having means for imparting a new speed of



travel to each sheet traveling therein, including a pair of nip rollers to press the belts onto the leading edge of each sheet in the first and second paths to attain a new speed of travel for each sheet prior to forming the superimposed pair of sheets; the improvement comprising means for handling transverse rows of cartons cut from a sheet being discharged from the processing apparatus, said means for handling including means arranged at the input end of the frame for accelerating the speed of advance of each transverse row of cartons cut from a sheet as it is discharged from said processing apparatus and control means disposed along each path immediately adjacent the means for directing for engaging and decelerating the row as it is directed into the selected path and prior to engagement by the pair of nip rollers of the means for imparting.

4,354,672

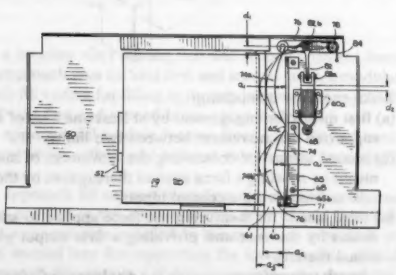
SHEET STACKING AND ALIGNING APPARATUS

Walter J. Kulpa, Norwalk, and John R. Paulik, Newtown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,413

Int. Cl.³ B65H *31/36*

U.S. Cl. 271—221 **5 Claims**



1. A sheet stacking and aligning apparatus comprising:

A. means defining a sheet receiving tray adapted to receive sheets successively from a feeding apparatus, said tray comprising at least a bottom wall and an abutment in the path of movement of the sheets for arresting forward movement of the sheets,

B. registration means disposed adjacent one side edge of said bottom wall against which the sheets are urged for lateral alignment of the sheets,

C. jogging means disposed adjacent the opposite side edge of said bottom wall for urging said sheets toward and against said registration means, said jogging means comprising,

(1) an elongate strip of flexible material extending along said opposite side edge of said bottom wall and,

(2) means for causing said strip to bow towards the side edge of the sheets in at least one location along the length of said strip when one end of said strip is moved toward the other end to form at least one wave having an amplitude such that the crest of said wave engages the side edge of each sheet for urging said sheet toward and against said registration means, and,

D. means for moving at least one end of said strip toward the other end thereby causing said strip to bow and form said wave.

4,354,673

INADEQUATELY FED SHEET DETECTORS FOR USE IN SHEET-FED PRESS

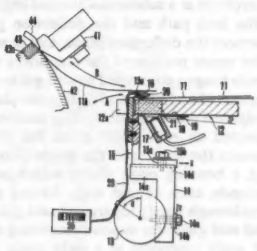
Tamio Kuroda, Soka, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,754

Claims priority, application Japan, Dec. 20, 1979, 54/175488[U]

Int. Cl.³ B65H *7/02*

U.S. Cl. 271—227 **4 Claims**



1. An inadequately fed sheet detector for use in a sheet-fed press comprising:

a feed board adapted to convey a sheet to be printed;

a front guide having a sheet abutting surface for receiving and registering one end of said sheet and a sheet guide tongue extending substantially in parallel with an upper surface of said feed board to cover said sheet end;

said sheet abutting surface being formed with a notch;

a transparent plate mounted on one end of said feed board; and

a luminous element and a light receiving element respectively mounted on said feed board and said sheet guide tongue on the opposite sides of said transparent plate;

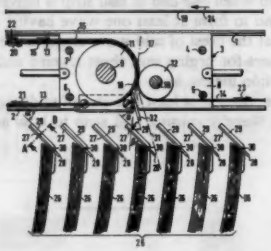
said luminous element being inclined with respect to vertical so that an area illuminated thereby takes the form of an ellipse; and

said transparent plate being received by said notch so as to position a free end of said transparent plate in said illuminated area.

4,354,674
DEVICE FOR DISTRIBUTING FLEXIBLE SHEETS IN COLLECTING BINS

Wilfried Dorer, Donaueschingen; Manfred Fuss, St. Georgen, and Werner Lehmann, Gutach, all of Fed. Rep. of Germany, assignors to Mathias Bäuerle GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,820
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945502
Int. Cl.³ B65H *39/115, 29/52*
U.S. Cl. 271—296 8 Claims



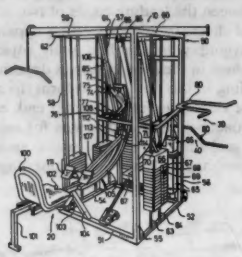
1. An improved device for distributing flexible sheets, particularly paper sheets, into a plurality of collecting pockets successively arranged beneath a horizontal sheet feed path, of the type having a plurality of walls substantially vertically disposed and successively arranged beneath the feed path, adjacent walls having an area therebetween defining one of the collecting pockets, means for moving the sheets through the feed path and for successively displacing individual ones of the sheets through a substantially vertical deflection plane into a collecting pocket, the improvement comprising a guide plate connected at the upper end of each of the walls and extending upwardly therefrom at a substantially equal angle of inclination relative to the feed path and the deflection plane and positioned to intersect the deflection plane, and at an oblique angle relative to the upper portion of the respective wall connected thereto, a guide tongue connected to said guide plate extending in the same plane of inclination of said guide plate and projecting into an adjacent one of the collecting pockets, and guide fin means connected to said guide plate for preventing areal contact between the sheet and the guide plate, each of said walls having a bending edge above which said guide plate obliquely extends, each of said walls having an aperture extending therethrough partly separating said guide tongue from said wall, and said guide fin means comprising a corrugation in each of said walls extending at a right angle relative to said bending edge.

4,354,675
WEIGHT LIFTING DEVICE

Stanley B. Barclay, Mississauga; Eugene L. Knaitner, Weston; Eugenio E. Remedios, Georgetown; Arkadi Altosaar, Willowdale, and Richard Rusiniak, Mississauga, all of Canada, assignors to Global Gym & Fitness Equipment Limited, Weston, Canada

Filed Feb. 6, 1980, Ser. No. 119,087
Claims priority, application Canada, Jun. 12, 1979, 329597
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 12 Claims

1. Weight training apparatus comprising:
a vertical guide;
a weight stack engaged with and reciprocally movable along said vertical guide;
a second guide inclined at a predetermined angle to said vertical guide;
said second guide extending upwardly in a direction inclined away from said vertical guide;
a carriage reciprocally movable along said second guide;
means for moving said carriage along said second guide; and
a rigid link means pivotally connected to said weight stack and to said carriage so that movement of the carriage

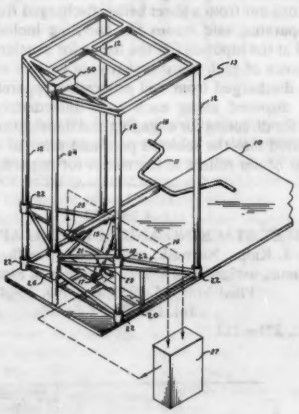


along said second guide will cause said weight stack to be lifted;
said rigid link extending upwardly in a direction inclined away from said vertical guide.

4,354,676
EXERCISER

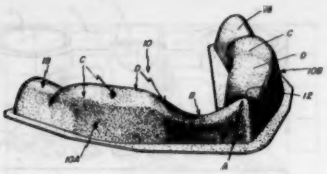
Gideon B. Ariel, Belchertown, Mass., assignor to Pepsico, Inc., Purchase, N.Y.

Filed Oct. 13, 1978, Ser. No. 949,237
Int. Cl.³ A63B *21/24*
U.S. Cl. 272—129 32 Claims



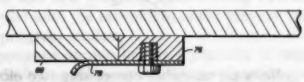
1. An exerciser comprising:
(a) first means for engagement by at least one limb of a user, supported for movement between two limits;
(b) second means for controlling the movement of said first means by resisting a force applied thereagainst by the user, said means having a control input;
(c) third means for measuring the force applied to said first means by the user and providing a first output proportional thereto;
(d) fourth means for measuring the displacement of said first means between said limits and providing a second output proportional thereto; and
(e) fifth, programmable means having as inputs said first and second output and providing a third output coupled as the control input to said second means.

4,354,677
EXERCISING AND TONING DEVICE
Robert J. Young, 230 Spring St., Medford, Mass. 02155
Filed Mar. 21, 1980, Ser. No. 132,697
Int. Cl.³ A63B 23/00
U.S. Cl. 272—144 6 Claims



1. A portable device for exercising and toning the buttock muscles useable in either a seated or supine position and comprising, a portable base adapted to be positioned on an elevated flat fixed surface, upright means integral with and extending from the base forming two legs extending angularly from a common vertex, each leg having a similarly configured upper wall surface having different elevation sections including a common peak at said vertex, at least one other high elevation section, means integral with each leg for holding the device when used in the seated position, and a lower elevation section of each leg adjacent to and contiguous with the vertex peak, disposed intermediate the vertex peak and said at least one other high elevation section and useable in the seated position for exercising and toning the buttocks muscles, said device adapted for use with the vertex facing forwardly of the user, said upright walls defining a hollow chamber open from the bottom.

4,354,678
MODULAR APPROACH FILL SYSTEM
Will Heddon, Lake Wales, Fla. 33853
Division of Ser. No. 47,357, Jun. 11, 1979, Pat. No. 4,269,411.
This application May 23, 1980, Ser. No. 152,697
Int. Cl.³ A63D 1/04
U.S. Cl. 273—51 7 Claims



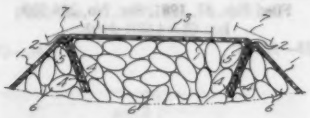
1. In a bowling alley having first and second adjacent lanes and an approach area for said first and second lanes, a modular approach fill system for filling in the gap between the approach areas of said first and second lanes, comprising:

a. an approach fill module formed from a plurality of hardwood strips adhesively bonded side to side in a single layer;

b. an approach fill support including slat means having one side coupled to the approach area deck of said first lane and a second side coupled to the approach area deck of said second lane for supporting the lower surface of said approach fill module and for maintaining the upper surface of said module level with the upper surface of the approach area of said first and second lanes; and

c. clip means coupled to the lower surface of said approach fill module for coupling said approach fill module to said slat means.

4,354,679
GAME BAG
Richard D. Steinmetz, 91448 Steinmetz Rd., Junction City, Oreg. 97448
Filed Apr. 9, 1981, Ser. No. 252,333
Int. Cl.³ A63B 37/02
U.S. Cl. 273—58 A 4 Claims



1. Bag construction for a ball-like article used for recreational purposes, said article construction comprising:

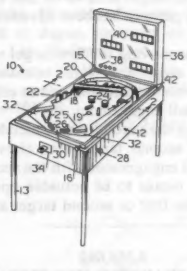
a plurality of pliable cover members each being of polygonal shape and having its perimetrical edges in juxtaposition with a like edge of an adjacent member, each of said members having inwardly extending marginal areas,

intersecting lines of stitching joining adjacent cover members along their juxtaposed edges,

filler material of a discrete nature fully occupying the ball interior, and

said intersecting lines of stitching serving to reinforce the cover members against deformation along said abutting marginal areas.

4,354,680
PINBALL GAME INCLUDING ELEVATED BALL PATHWAY
Gregory E. Kmiec, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.
Filed Oct. 29, 1980, Ser. No. 201,756
Int. Cl.³ A63F 7/00
U.S. Cl. 273—121 A 15 Claims



1. A pinball machine comprising:

a downwardly inclined playfield;

a ball;

means for propelling the ball onto the playfield;

one or more pivotally mounted flippers disposed near the playfield for affecting motion of the ball; and

a play feature comprising a ball carrying member defining a path along which the ball rolls, the ball carrying member being constructed so that a ball rolling along the path must travel generally along a predetermined line, the ball carrying member having an entrance and an exit and being disposed so that the path is located above the playfield, the play feature being disposed so that a ball rolling along the playfield can pass under a portion of the path without coming in contact with the play feature, means for transferring a ball in play from the playfield to the entrance of the ball carrying member, and means for moving a ball from the entrance of the ball carrying member, along the

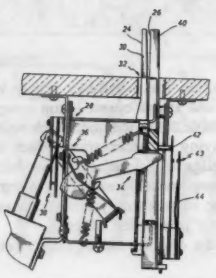
path and out the exit of the ball carrying member back onto the playfield.

4,354,681

DROP TARGET ASSEMBLY FOR PINBALL GAME

Roman F. Garbark, Westchester, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Feb. 17, 1981, Ser. No. 234,780
Int. Cl.³ A63D *3/02*
U.S. Cl. 273—121 R **6 Claims**



1. An improved drop target assembly for a flipper-type pinball game machine comprising:
(a) a frame;
(b) a first target member movably supported by said frame for defining a first target area, said first target member being movable to advance the first target area between a position above the surface of the playfield and a position below the surface of the playfield;
(c) a second target member coupled to and supported by said frame for defining a second target area, the second target member being disposed behind the first target member to enable the second target area to be ball engageable only when the first target area has been advanced to the below-surface position;
(d) a mechanism for moving the first target member thereby to drop the first target area to the below-surface position upon ball engagement therewith and to expose the second target area for ball engagement;
(e) means mounting the second target member to the frame to maintain the second target area above the playfield surface upon ball engagement with the second target; and
(f) switch contact means to be actuable upon ball engagement of either the first or second target areas.

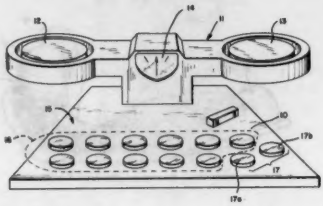
4,354,682

METHOD AND APPARATUS FOR ENHANCING THE TWELVE COIN BALANCING PUZZLE

Vlastimil Vcela, 1228 12th St., Santa Monica, Calif. 90401

Filed Apr. 6, 1981, Ser. No. 251,392
Int. Cl.³ A63F *9/06*
U.S. Cl. 273—153 R **11 Claims**

1. A method of enhancing the twelve coin balancing puzzle comprising the steps of:
(a) making thirteen coins sufficiently similar as to be indistinguishable by the unaided human senses;
(b) making eleven of said thirteen coins of identical weight to result in eleven identical coins and two remaining coins;
(c) making one of said two remaining coins heavier than any one of said eleven identical coins by an amount less than can be detected by a person handling the coins yet enough to unbalance a scale when weighed against one of said eleven identical coins;
(d) making the other of said two remaining coins lighter than any one of said eleven identical coins by an amount less than can be detected by a person handling the coins yet enough to unbalance said balance scale when weighed against one of said eleven identical coins; and
(e) making said two remaining coins distinguishable from said eleven coins by an aid to the human senses but wherein such aid does not permit distinguishing the two



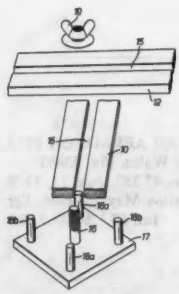
remaining coins from each other, wherein the two remaining coins can readily be separated from the eleven identical coins and one of the two returned to the eleven identical coins to provide twelve coins for the puzzle, a player not knowing whether the returned coin is the heavier or the lighter coin.

4,354,683

GOLFER'S STANCE POSITIONING AID

Roderic F. Woolland, 34, Kitchener Ave., Gravesend, Kent, England

Filed Jun. 26, 1980, Ser. No. 163,133
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—187 R **2 Claims**



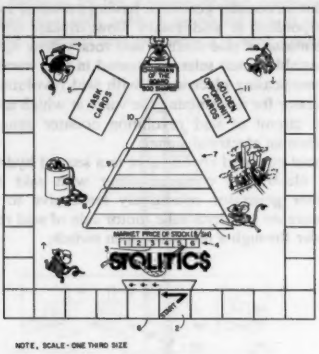
1. In a golfer's aid assembly comprising two elongate members and means for maintaining said two members normal to one another and slidable relative to one another, said members also having graduations and markings carried thereon such that, in use, one member is located on the ground to point towards the ball, the other member is located on the ground to point towards the target, and said members being located relative to one another according to the club to be used in accordance with the graduations thereon and markings thereon indicate ideal locations for the feet of the user, the improvement wherein said means for maintaining the two members normal to one another comprises a plate having four upstanding members carried thereon, each of the said two members also having an elongated slot into which opposed pairs of the upstanding members slidably fit, and wherein said plate carries a threaded member in a central location relative to the said four upstanding members whereby said threaded member locates through the slots in the said two members and cooperates with a nut located thereon to releasably clamp the assembly in a required position.

4,354,684

BUSINESS STRATEGY BOARD GAME

Paul F. McKinley, 118 N. Winebiddle Ave., Pittsburgh, Pa. 15224

Filed Dec. 4, 1980, Ser. No. 212,756
Int. Cl.³ A63F 3/00
U.S. Cl. 273—256 6 Claims



1. A business game comprising:

a game board having a starting space and a closed circuit of sequentially arranged playing token perimeter resting spaces, each such space being provided with instructions to players for performance of simulated business activities, and, on occasion, for choosing a mandatory instruction card from a designated stack of such cards, whereby the performance of at least some of such instructions will afford progress of a player with respect to at least one of a plurality of business-oriented goals, said game board also having a first progress section, common to all players, such first progress section being located within the perimeter resting spaces and being provided with a plurality of playing token resting spaces diminishing in number from the starting position which is adapted to be occupied by a plurality of playing tokens to a single finishing position which is adapted to be occupied by only a a single playing token, said playing token resting spaces increasing in value toward the finishing position with respect to one of said plurality of goals and signifying the players' progress toward such goal; the movement of the players' playing tokens in said first progress section being coordinated at least in part with the movement of the players okens in a second progress section;

a second progress section having a plurality of sequentially arranged playing token resting spaces signifying a player's progress toward a second business-oriented goal;

separate playing tokens for said playing section and each of said progress sections, said playing tokens being adapted to be moved sequentially through said playing section and said progress sections; said playing tokens being provided with distinctive indicia to distinguish the playing tokens of each player from those of each other player;

a first set of instruction cards, such cards being provided with a plurality of mandatory instructions to players to perform optional, simulated business activities;

a second set of opportunity instruction cards, such cards being provided with a plurality of optional and mandatory instructions to players to perform simulated business activities to be dealt to the players, the instructions of which may be performed by a player at his option during any one of his playing turns, so as to enable the players to exercise some discretion in the movement of their playing tokens;

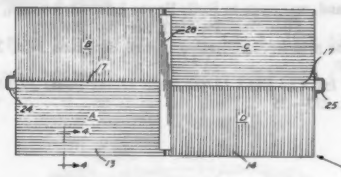
random selection means for operation by a player during his playing turn to direct such player to move his playing token circuitously about the playing token resting spaces, the length of the path of such movements being determined by the random selection means.

4,354,685

HAND TOSS-CATCH GAME APPARATUS

Edward A. Hampson, 4704 Harlan St., Ste. 260, Denver, Colo. 80212

Filed Jun. 25, 1981, Ser. No. 277,282
Int. Cl.³ A63B 71/04
U.S. Cl. 273—342 11 Claims



1. Game apparatus comprising:

a playing board including two half-sections joined to move between playing position and a folded position, said board having a top playing surface provided with a layer of granules secured thereto throughout the playing surface for spin enhancement of a playing ball that is bounced on said surface by a player on each side of the board;

a lateral bar of a selected width and height separating the playing board into playing areas on opposite sides; and

a longitudinal strip dividing the playing areas on each side into two playing parts of equal size,

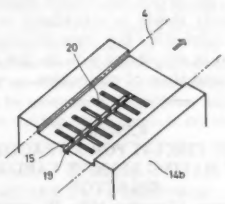
the playing ball being hand-tossed by a player to bounce first on one side playing area and then on the other side playing area over said bar during play of the game.

4,354,686

CONTACT-FREE SEALING MEMBER

Kiyokazu Imanishi, Higashiosaka, and Takashi Ichiyanagi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 27, 1980, Ser. No. 163,475
Claims priority, application Japan, Jul. 6, 1979, 54-86180; Aug. 17, 1979, 54-105298
Int. Cl.³ F16J 15/40
U.S. Cl. 277—3 13 Claims



1. A contact-free sealing member for sealing an isolated chamber containing a low pressure area from an area consisting of a higher pressure, said member comprising:

means for defining a slot path for receiving a tape-like object therethrough from a high pressure side into said isolated chamber on a low pressure side, said slot means located on a wall part of said isolated chamber and said slot means used for generating a hydrostatic gas bearing effect, a cross-sectional area of said slot means being slightly larger than that of said tape-like object,

wherein said slot means has at least one pair of grooves in a

predetermined pattern on the faces above and below said tape-like object, and that,

one end of each of said grooves being opened to said high pressure side thereby generating a hydrostatic gas bearing effect of surface restricter type when said tape-like object is fed through said slot means.

4,354,687

GAS TURBINE ENGINES

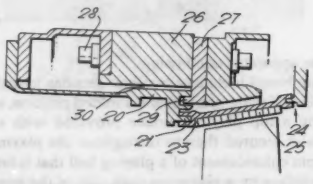
Brian C. Holland, Darley Abbey; Roy T. Hirst, Ticknall; Roger J. M. Sills, and Cyril G. Moore, both of Littleover, all of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 25, 1981, Ser. No. 296,072

Claims priority, application United Kingdom, Nov. 22, 1980, 8037540

Int. Cl.³ F16J *15/00*; F02F *11/00*; F04D *29/08*

U.S. Cl. 277—26 **7 Claims**



1. A gas turbine engine turbine tip sealing device comprises an annular sealing ring, a first annular control member having means co-operating with the annular sealing ring, said annular control member having relatively rapid response rate such that it expands or contracts quickly in accordance with a temperature variation, and a second annular control member having a relatively slow response rate such that it expands or contracts relatively slowly in accordance with variation in temperature the arrangement being such that upon an increase in temperature occurring on the device the first annular control member expands relatively rapidly and by virtue of its co-operating means also expands the annular sealing ring and wherein the improvement comprises in that when the first annular control member reaches a particular diameter it contracts and is restrained from further expansion by the second annular control member such that the sealing ring is then expanded relatively slowly in accordance with the rate of expansion of the second annular control member, and upon a decrease in temperature occurring upon the device the annular sealing ring initially contracts relatively slowly in accordance with the second annular control member in a first phase of contraction and then relatively quickly in accordance with the first annular control member in a second phase of contraction.

4,354,688

HYDRAULIC CIRCUIT FOR A TRACTOR DRAWN IMPLEMENT HAVING REMOTE VARIABLE HEIGHT SELECTOR

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 3, 1981, Ser. No. 240,037

Int. Cl.³ A01B *63/22*

U.S. Cl. 280—43.23 **5 Claims**

1. In an agricultural machine including a tractor vehicle providing a source of hydraulic fluid and a trail behind implement supported on a plurality of hydraulically pivoted mounted wheels an implement height selector control comprising:

a directional control valve in said tractor vehicle interposed between said source of hydraulic fluid and said trail behind implement;

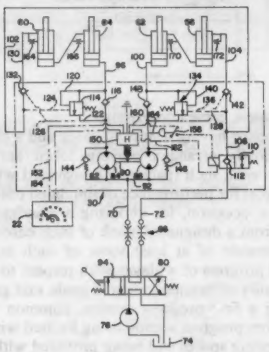
a rotory flow divider having a shaft connecting a plurality of rotors, said rotary flow divider hydraulically connected with said source of hydraulic fluid;

a plurality of hydraulic motors downstream of said rotary flow divider communicating hydraulically through hydraulic conduit with said source of hydraulic fluid through said rotary flow divider, said plurality of hydraulic motors including sets of hydraulic motors corresponding to the number of rotary flow divider rotors;

a revolution counter generator having a counter logic circuit incorporated in said rotary flow divider for counting revolutions of said shaft of said rotary flow divider;

an adjustable count selector located in said tractor vehicle communicating clectrically with said revolution counter generator for determining the value at which said counter logic circuit of said revolution counter generator will produce an electrical signal;

a solenoid operated check valve in a second hydraulic conduit electrically communicating with said revolution counter generator operatively responsive to hydraulic pressure on said hydraulic motor side of said rotary flow divider through a normally open switch;



a plurality of counter balance valves, one of each of said counter balance valves interposed in said hydraulic conduit between one of each of said plurality of rotors of said rotary flow divider and each set of said plurality of hydraulic motors, said counter balance valves communicating hydraulically through pilot lines to said second hydraulic conduit, said counter balance valves set to open either through pressure in said hydraulic conduit or said second hydraulic conduit;

a plurality of one-way check valves, one of each of said one-way check valves interposed in said hydraulic conduit between one of each of said pluralities of rotors of said rotary flow divider and each set of said plurality of hydraulic motors, said one-way check valve allowing flow from said rotary flow divider to said hydraulic motors;

a plurality of one-way pilot operated check valves, one of each of said one-way pilot operated check valves associated with one of each of said sets of hydraulic motors, interposed in said second hydraulic conduit and pilot operated to open allowing fluid to pass from said hydraulic motors through said second hydraulic conduit.

4,354,689

ADJUSTABLE BABY STROLLER HANDLE ROD

Giuseppe Perego, Via de Gasperi, 20043 - Arcore (Milano), Italy

Filed Dec. 11, 1980, Ser. No. 215,632

Claims priority, application Italy, Mar. 31, 1980, 21347/80[U]

Int. Cl.³ B62B *1/12*

U.S. Cl. 280—47.37 R **1 Claim**

1. An adjustment device for adjusting the height of a baby

stroller handle comprising an outer tube, an inner tube telescopically and slidably engaged in said outer tube, the handle connected to one of said inner and outer tubes, a flat V-shaped spring having two arms, one arm fixed to the inside of said inner tube, a pin extending from the other of said two arms, said inner tube having a hole therethrough with said pin extending through said hole, said outer tube having a plurality of spaced holes therealong, said pin engaged through one of said outer tube holes to fix the position of said outer tube with respect to said inner tube, a sleeve connected to said outer tube, a screw shaft threaded into said sleeve, a knob connected to

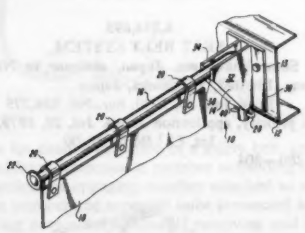
said screw shaft for turning said screw shaft to extend said screw shaft inwardly of said outer tube, said inner tube having a plurality of recesses corresponding to said outer tube holes, said screw shaft extending into one of said recesses to further fix the position of said outer tube with respect to said inner tube, said outer tube holes being equally spaced along a length of said outer tube, said recesses corresponding in number and location to said outer tube holes, said outer tube having one additional hole spaced from a last one of said plurality of holes in said outer tube, a distance equal to the spacing between said outer tube holes through which said screw shaft is extendible.

4,354,690

SUPPORT SYSTEMS FOR VEHICLE MUD FLAPS

Marlyn S. Hanson, 13822 W. Warren Dr., Lakewood, Colo. 80228

Filed Jul. 15, 1980, Ser. No. 169,161
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **7 Claims**



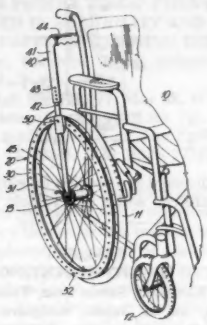
1. A bracket for mounting a mud flap system on a vehicle, said bracket comprising:
(a) a base plate adapted for attachement to a vehicle;
(b) a socket supported by said base plate, said socket extending in a substantially vertical direction and defining an upper opening when said base plate is attached to a vehicle;
(c) first and second substantially rigid side wall portions secured to said bracket substantially at right angles to said socket, said side wall portions spaced one from another and at a height somewhat higher than said upper opening of said socket; and
(d) means for providing both support and dampening, said support and dampening means connected between said side wall portions at about the same height as said upper opening of said socket, but spaced from said socket.

4,354,691

WHEEL CHAIR PROPULSION SYSTEM

Gerald A. B. Saunders, Bath, Canada, and Philip J. Lowe, Whitley Bay, England, assignors to Queen's University at Kingston, Kingston, Canada

Filed Aug. 28, 1980, Ser. No. 182,128
Claims priority, application Canada, Aug. 31, 1979, 334875
Int. Cl.³ B62M *1/16*
U.S. Cl. 280—242 WC **5 Claims**



1. A wheel chair propulsion device comprising:
(a) an annular ring, smaller in diameter than the large wheel of a conventional wheel chair and having a plurality of spaced apart recesses in a surface thereof;
(b) means for fastening said ring to the large wheel of the wheel chair in co-axial relation therewith and spaced outboard therefrom;
(c) lever means having one end thereof adapted for pivotal mounting on an axle mounting the large wheel on the wheel chair and an opposite end that projects above a conventional arm rest on the wheel chair; and
(d) a drive mechanism mounted on said lever arm and positively engageable with said annular ring for rotating the same and disengageable therefrom to allow free rotation of the large wheel when the ring is mounted on the wheel chair wheel, said drive mechanism comprising a lug movable into and out the recesses in the ring in response to movement of the lever means in a direction transverse to the plane of the wheel and resilient compressible means compressed by movement of the lever means in a direction to move the lug into a recess in the ring.

4,354,692

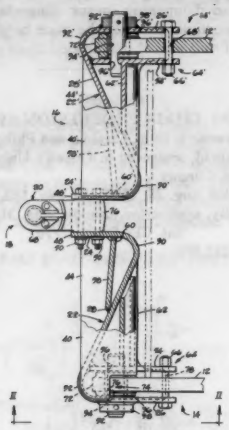
HEAVY DUTY DRAWBAR

Stephen G. Shoup, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 814,380, Jul. 11, 1977, Pat. No. 4,212,139.
This application Dec. 17, 1979, Ser. No. 104,221
Int. Cl.³ B60D *1/02*
U.S. Cl. 280—495 **16 Claims**

1. In a vehicle having a pair of generally vertical frame members, one extending along each side thereof to a rearward end of said vehicle, a drawbar unit comprising:
a hitch generally centrally intermediate said frame members adjacent said rearward end of said vehicle; and
a pair of generally Z-shaped brace means, each having a first leg thereof affixed to said hitch, a second leg thereof affixed to a respective one of said frame members and a

bridge from generally a forward end of said first leg to generally a rearward end of said second leg, said forward



end being disposed at a position forwardly of a position of said rearward end within said vehicle.

4,354,693

VEHICLE HEIGHT ADJUSTING DEVICE

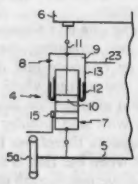
Koichi Maeda, Kawasaki; Sumio Ema, Yokohama, and Tetsuo Saito, Zama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Aug. 7, 1980, Ser. No. 176,242

Claims priority, application Japan, Aug. 20, 1979, 54-114328[U]

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—714 **4 Claims**



1. A vehicle height adjusting device comprising:

air compressor means for generating compressed air;

air tank storage means for receiving and storing pressurized air from said air compressor means;

elevating means, adapted to be mounted between the chassis and a wheel shaft of the vehicle, for receiving a flow of pressurized air in a first direction from said air compressor means or pressurized air from said air tank storage means and thereby for increasing the height of the vehicle;

exhaust valve means for exhausting air from said elevating means in a second direction reverse to said first direction and thereby for decreasing the height of the vehicle;

dehumidifying means receiving said flow of pressurized air in said first direction for removing water therefrom, and receiving said air exhausted from said elevating means in said second direction;

height detecting means for detecting the height of the vehicle and for generating signals representative thereof;

pressure detector means for detecting the air pressure in said air tank storage means and for generating signals representative thereof; and

electric control circuit means, operatively connected to said height detecting means, said air compressor means and said pressure detector means, for receiving said signals from said height detecting means and said pressure detector for controlling the operation of said air compressor means as a function thereof, including deactivating said air compressor means when said exhaust valve means is operable for exhausting air from said elevating means even when the air pressure in said air tank storage means is below a predetermined minimum which would otherwise activate said air compressor means.

4,354,694

PASSIVE SAFETY BELT DEVICE

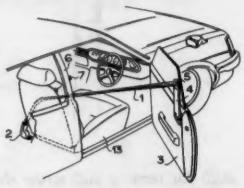
Nobuo Satoh, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1980, Ser. No. 158,176

Claims priority, application Japan, Jul. 17, 1979, 54-98655[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **9 Claims**



1. A passive safety belt device for a vehicle having on each side a sash-less door and a center pillar with an inside member, comprising

a retractor provided in a lower portion of a central portion of the vehicle,

a door pole upwardly extending from a rear portion of said sash-less door and formed with an engaging hole in said door pole,

a safety belt connected to said retractor and to said door pole at a portion adjacent said engaging hole,

a latch bar secured to said inside member of said center pillar so as to engage with said engaging hole of said door pole in a closed position of said sash-less door,

and

a reinforcement plate constituting means for securing said latch bar to said inside member of the center pillar at a plurality of positions.

4,354,695

SEAT BELT SYSTEM

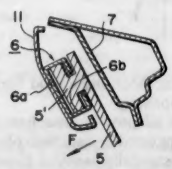
Yoshimi Sato, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 30, 1980, Ser. No. 164,275

Claims priority, application Japan, Jul. 20, 1979, 54-92767

Int. Cl.³ B60R *21/00*

U.S. Cl. 280—804 **10 Claims**



1. A seat belt system for an automotive vehicle, comprising:

a shoulder belt, including a lower end which is fixed to the floor of the vehicle body and a slider connected to the upper end, said slider having an engaging portion;

a guide rail fixed on one side wall of the vehicle body along its longitudinal direction, said guide rail having an open side and an opposite closed base portion and an engaging portion adapted to be engaged with the engaging portion of said slider, so that said slider is slidably fitted to said guide rail;

a roof side rail fixed to the vehicle body and having an inner wall inclined inwardly with respect to the interior of the vehicle body and arranged in parallel to said guide rail;

means for actuating said slider in response to the opening and closing of a door of the automotive vehicle to move the slider between a forward and a rear position;

means for locking said slider in its rearmost position;

said engaging portion of said guide rail facing the side wall of the vehicle body;

said slider being slidably movable between said guide rail and said side wall of the vehicle body;

said guide rail having its open side facing said side wall of the vehicle body and its opposite closed base portion facing the interior of the vehicle body;

said engaging portion of said slider being inserted through said open side of said guide rail into said engaging portion of said guide rail; and

said open side of said guide rail being set adajcent to said inwardly-inclined inner wall of said roof side rail to form a clearance for slidable movement of said slider in such a manner that the upper edge of said slider contacts the inner wall of said roof side rail when said shoulder belt undergoes a predetermined downward force.

4,354,696

DEVICE FOR PASSIVE ACTUATION OF A SAFETY BELT

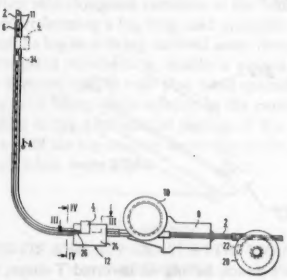
Hans-Joachim Volk, Ebersdorf, and Michael Forkel, Coburg, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,729

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942207

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **11 Claims**



1. Device for passive actuation of a safety belt, comprising an elongated force transmission member unyielding in tension and compression, an engaging member attached to said force transmission member and arranged to be connected to a safety belt, a locking device for removably receiving said engaging member for securing said engaging member in the locked position, said engaging member being interengageably attached to said force transmission member so that a certain amount of play is present between said engaging member and said force transmission member in the elongated direction of said transmission member whereby said force transmission member can be moved in the elongated direction for the certain amount of play before commencing movement of said engaging member, release means fixed to said force transmission means adjacent to and spaced from said engaging member for movement with said force transmission member relative to said engaging member for releasing said engaging member from the locked position, said release means comprises a release member, in the locked position of said engaging member said release member being movable into contact with said locking device by moving said force transmission member so that said force transmission member and release member move relative to said engaging member with said release member being movable into contact with said locking device so that said locking device is displaced from the locking contact with said engaging member, and when said force transmission member moves a distance greater than the certain amount of play between said engaging member and said force transmission member said engaging member is moved out of said locking member while said release member remains spaced from said engaging member.

4,354,697

PROCESS FOR PRODUCTING P-PHENYLPHENOL RESIN IMPROVED IN SOLUBILITY AND NO CARBON COPYING PAPER COMPRISING THE SAME

Mitsuru Fuchigami, Takasago, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 799,777, May 23, 1977, abandoned. This application Jun. 12, 1980, Ser. No. 158,803

Claims priority, application Japan, Jun. 2, 1976, 51/64300

Int. Cl.³ B41L *1/20*; B32B *27/42*

U.S. Cl. 282—27.5 **12 Claims**

1. A color-forming sheet for no carbon copying paper having a coating film containing the p-phenylphenol resin obtained by a process which comprises reacting at a pH value not higher than 1.9 p-phenylphenol itself or a mixture of 100 parts by weight of p-phenhlphenol and 30 parts by weight or less of other substituted phenol with a formaldehyde or a compound capable of forming formaldehyde in the presence of an acidic catalyst and a monohydric alcohol having a boiling point of 80°-170° C. in an amount of 10 to 200 parts by weight based on 100 parts by weight of the p-phenylphenol or the mixture and removing the alcohol, wherein said p-phenylphenol resin is soluble in ethyl acetate and polyethylene glycol.

4,354,698

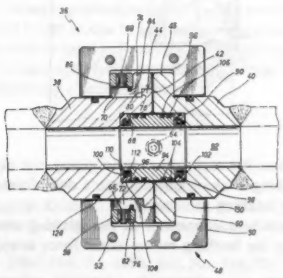
SWIVEL JOINT CONSTRUCTION FOR PRESSURE CONTAINING CONDUIT

Morris B. Linder, and John J. Beffano, both of Houston, Tex., assignors to Quality Valve & Machine Works, Inc., Houston, Tex.

Filed Sep. 29, 1980, Ser. No. 191,507

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—98 **21 Claims**



1. A swivel joint construction for movable flow lines, said swivel joint construction comprising:

a pair of hub elements each defining openings that cooperate to define a flow passage through said swivel joint construction, one of said hub elements defining first annular planar thrust transmitting shoulder means oriented in substantially normal relation with the axis of rotation of

said swivel joint and the other of said pair of hub elements defining second annular planar thrust transmitting shoulder means of larger diameter as compared to said first thrust transmitting shoulder means and being in substantially parallel relation with said first thrust transmitting shoulder means;

a roller thrust bearing assembly of circular form defining an inner peripheral dimension of larger diameter as compared to the outer peripheral diameter of said first thrust transmitting shoulder means allowing said bearing assembly to pass over said first thrust transmitting shoulder means and adapted to be received in encircling spaced relation about said one of said hub elements;

segmented bearing retainer means adapted to be assembled at least partially about said one of said hub elements and cooperating with said first thrust transmitting shoulder means to define bearing thrust shoulder means of substantially the same dimension as said second thrust transmitting shoulder means; and

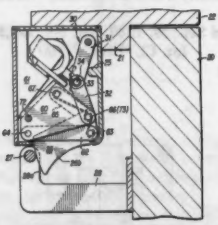
split housing means adapted to be positioned about said hub elements and enclosing said bearing assembly and bearing retainer means, said housing means defining opposed spaced thrust support surface means said bearing assembly engaging one of said thrust support surface means and developing a rotatable relation between said one of said hub elements and said housing means, said second thrust transmitting shoulder means engaging the other of said thrust support surface means.

4,354,699

APPARATUS FOR DELAYING OPENING OF DOORS

Emanuel L. Logan, Arlington, Va., assignor to Reliable Security Systems, Inc., Cockeysville, Md.

Filed May 9, 1980, Ser. No. 148,383
Int. Cl.³ E05C *15/02*
U.S. Cl. 292—201 **12 Claims**



1. Apparatus for securing an emergency exit door wherein the door is hinged along one edge to a door frame;

means for latching the door;

panic bar means connected to the latching means for unlatching the latching means when force is applied to the bar;

delay means, separate from the latching means and panic bar means, said delay means including a closure operated bolt means which extends between the door and door frame for preventing the door from opening when projected and allowing the door to open when retracted, and means for retarding movement of the bolt means from the projected to the retracted position, and

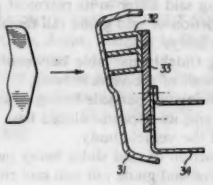
means for indicating that an attempt is being made to open the door while retraction of the bolt is being retarded.

4,354,700

BUMPER ATTACHMENT APPARATUS, IN PARTICULAR FOR AUTOMOBILES

Marcel Goupy, Saint Cloud, and Pierre Roubinet, Rueil-Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 29, 1980, Ser. No. 116,580
Claims priority, application France, Feb. 6, 1979, 79 02973
Int. Cl.³ B60R *19/00*
U.S. Cl. 293—132 **10 Claims**



1. A pseudo-resilient bumper or shield attachment comprising:

a vertically extending elastically resilient cantilever counter-fitting having one end attached to the chassis of a vehicle and having another end; and

an inelastically deformable energy absorbing block having collapsible partitions, said block being in contact between said other end and said bumper or shield,

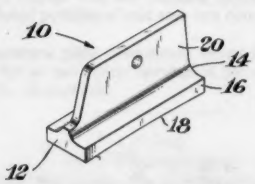
wherein said block comprises a box having thin walled partitions, said partitions extending perpendicular to said resilient counter-fitting.

4,354,701

GLAZIER'S PUNCH

Wilbur A. Marshall, Rte. 2, Box 96C, Aurora, Mo. 65605

Filed Dec. 5, 1980, Ser. No. 213,495
Int. Cl.³ A67F *13/06*
U.S. Cl. 294—1 R **5 Claims**



1. A glazier's punch having an inverted T-shape, a first or bottom portion integrally affixed to and connected with a second or top portion which extends upwardly from said bottom portion, said bottom portion having a generally flat slightly longitudinally concave face disposed oppositely to said top portion, said first end of said punch being adapted to contact a fastener means, such as a glazier's point, and said second end of said punch being adapted to receive a driving force.

4,354,702

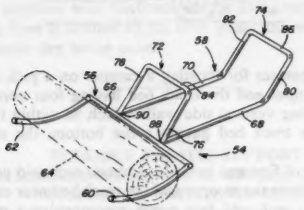
WOOD FIRE FEEDER

Ray Clements, 110 Ray Ave., and Morris Clements, 201 Ray Ave., both of Rainsville, Ala. 35986

Filed Aug. 26, 1980, Ser. No. 182,397
Int. Cl.³ A47J *49/00*
U.S. Cl. 294—9 **3 Claims**

1. A device for lifting a log and inserting it endwise into a

stove or other wood burning appliance comprising a pair of straight, parallel, elongated, rigid members spaced apart a distance enabling the free ends to be received through the door opening of a stove and with the members engaging the external surface of a log along spaced longitudinal surfaces on opposite sides of the center of the lower surface of the log, a transverse member rigidly connecting said elongated members adjacent the center thereof and disposed in the same horizontal plane to retain the elongated members in parallel relation and forming a stop to limit movement of the log onto the elongated members from the free ends thereof, each of said elongated members including an upwardly extending member at the end thereof remote from the free end thereof, said upwardly extending members being rigid with respect to said elongated members, a transverse member rigidly interconnecting the upper ends of the upwardly extending members to maintain the elongated members in parallel relation and forming a straight handle



extending in a horizontal plane parallel to the horizontal plane of the elongated members to enable the handle to be grasped at any point along its length, and a centrally disposed handle adjacent the center of said elongated members and rigidly supported in relation thereto and including a straight rigid member parallel to said straight handle and disposed in substantially the same horizontal plane, said straight rigid member having the ends thereof rigidly connected to said elongated members by a pair of parallel rigid members extending upwardly from said elongated members at the ends of the transverse member forming a log stop, said upstanding members at the ends of the log stop being inclined away from the free ends of the elongated members to enable a person to grasp the centrally disposed handle with their hand spaced from the end of the log with lifting force applied to the centrally disposed handle being above a substantial portion of the log to reduce the tendency of the log causing the device to tilt about a longitudinal axis when being lifted.

4,354,703

METHOD OF AND APPARATUS FOR TRANSPORTING ARTICLES

Peter Schmidt, Denkendorf, and Emil Mühlberger, Esslingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,404

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931927

Int. Cl.³ B66C *1/02*

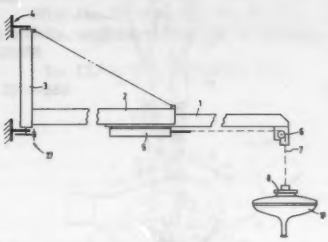
U.S. Cl. 294—64 R **12 Claims**

1. A method of facilitating the manual and mechanical transport of articles using a grab comprising:

subjecting the grab in an unloaded condition to a first mechanical hoisting power of predetermined magnitude in relation to the weight of the grab,

manually guiding said grab onto the article and during transport,

subjecting said grab in a loaded condition to a second mechanical hoisting power which is higher than that acting on the unloaded grab, and smaller than the weight of the loaded grab, and



removing the article from said grab and then switching from said second to said first mechanical hoisting power.

4,354,704

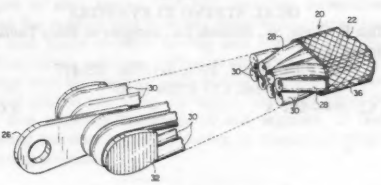
SLING AND METHOD FOR MAKING SAME

Robert J. Mayerjak, Torrington, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Oct. 1, 1980, Ser. No. 192,863

Int. Cl.³ B66C *1/12*

U.S. Cl. 294—74 **28 Claims**



1. A sling comprising: a cord means extending between two spaced ends and having a plurality of bends at each of said ends and a plurality of strands each extending from one to the other of said ends, half of said strands of said cord means being twisted together to form a first discrete rope extending between said ends and the other half of said strands of said cord means being twisted together to form a second discrete rope extending between said ends, said two ropes being individually distinct and being untwisted relative to one another between said ends, said bends at one of said ends being positioned adjacent one another to form collectively a first eye and said bends at the other of said ends being positioned adjacent one another to form collectively a second eye.

4,354,705

CABLE GRIPS

Louis W. Shorey; Keith W. Hill, and Alan R. Davis, all of Minehead, England, assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Oct. 14, 1980, Ser. No. 196,726

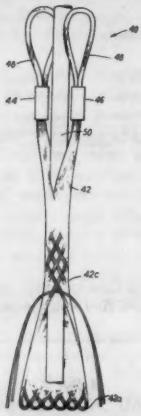
Claims priority, application United Kingdom, Oct. 16, 1979, 7935868

Int. Cl.³ F16L *3/00*; F16G *11/02*

U.S. Cl. 294—86 CG **4 Claims**

1. A cable grip of open-mesh construction formed by interwoven strands which comprises a leading end portion of closed tubular form and a tail end portion of split form, said leading end portion being closed circumferentially by interwoven strands of the grip, and said tail end portion including a

first series of mesh loops defining one end of the split and a second series of mesh loops defining the opposite edge of the



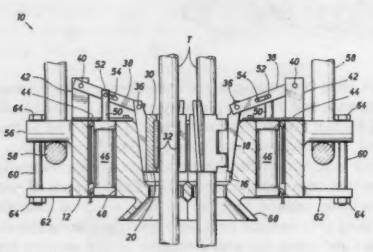
split, and means for binding the first and second series of loops together for closing the tail end of the grip.

4,354,706

DUAL STRING ELEVATORS

William E. Coyle, Sr., Houma, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Jun. 2, 1980, Ser. No. 155,477
Int. Cl.³ E21B *19/07*
U.S. Cl. 294—102 A **3 Claims**



3. A dual string elevator comprising a body having a single pair of tapered bowls extending vertically through its central portion,

gripping slips for each bowl,

an actuator for each set of gripping slips,

said body having a pair of actuator recesses,

one of said actuators being positioned within each of said recesses,

means connecting the actuators to their set of gripping slips whereby when each actuator is actuated in one direction its gripping slips are moved out of engagement with said bowl and when said actuator is actuated in the other direction its gripping slips are moved into a pipe gripping position within said bowl, and

a pair of lifting projections extending outward from said body in a position aligned with a plane passing through the axes of said bowls whereby the load of supporting a single string in one of said bowls does not introduce a bending load on said string,

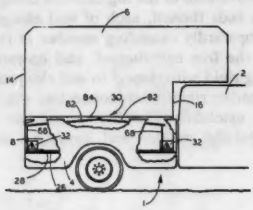
said recesses being aligned with said plane passing through the axes of said bowls and said lifting projections.

4,354,707

PICK-UP CAMPER LOCATING AND HOLDDOWN ASSEMBLY

Edward A. Jones, 7128 Edmond St., Burnaby, British Columbia, Canada (V3N 1A5)

Filed Oct. 27, 1980, Ser. No. 201,518
Int. Cl.³ B60P *3/32*
U.S. Cl. 296—167 **2 Claims**



1. An apparatus for locating a camper on a pick-up truck bed, the camper and the truck bed having four corners, the camper having vertical side walls which fit within the truck bed and the truck bed having a flat bottom, the apparatus comprising:

four pairs of first and second members, each said pair being securable to the camper and the truck bed near one of the corners, each said first member comprising a mounting plate securable to one of the side walls of the camper and an apertured plate extending perpendicularly therefrom having an opening, the apertured plate being horizontal when the mounting plate is secured to the one side wall, each said second member comprising a base plate securable to the bottom of the truck bed and a projection from the base plate having a pointed end which is upper when the base plate is secured to the truck bed, the projection having an inner end adjacent the base plate, the inner end and the opening of the first member having generally the same cross-sectional extents so the first and second members of each said pair of members fit closely together when the camper is lowered onto the truck bed and the camper is properly located thereon; and

a locking device for engaging each said pair of members when the camper is on the truck bed, the locking device comprising a slot in the projection, a shaft pivotly connected to the first member, a latch on the shaft engagable with the slot when the inner end of the projection is adjacent said apertured plate, a crank arm on the shaft for rotating the shaft, levers pivotly connected to the camper on each side thereof generally midway between the corners, and four rods each pivotly connected near one end to one said crank arm and pivotly connected near another end to one said lever so the locking devices can be engaged or disengaged when the levers are pivoted.

4,354,708

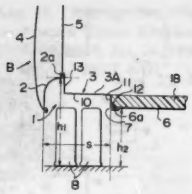
REAR TIRE HOUSE STRUCTURE FOR FREIGHT VEHICLE BODIES

Masaaki Koto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 12, 1980, Ser. No. 177,433
Claims priority, application Japan, Aug. 16, 1979, 54-104865
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—185 **7 Claims**

1. An automobile body structure including a rear tire house structure at each side of the body structure, said rear tire house structure comprising an outer tire house panel which is so shaped that it can be used with a tire of a first diameter for a single-tired wheel arrangement, a floor panel formed at a transversely outer edge with a cut-out which is of a transverse width sufficient to receive tires of a diameter smaller than the

first diameter for a double-tired arrangement and a longitudinal length sufficient to accommodate the first diameter tire, and an inner tire house panel connected with said outer tire house panel and said floor panel for defining a space for rear wheel



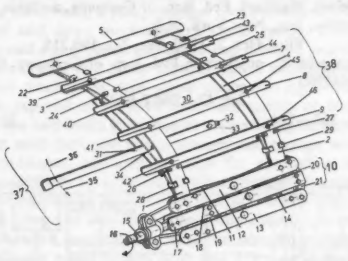
arrangement, said inner tire house panel being of a substantially L-shaped cross-sectional configuration having a horizontal flat surface coplanar with the floor panel so that a substantially flat loading floor is defined by the floor panel and the flat surface of the inner tire house panel.

4,354,709

FLEXIBLE ELASTIC SUPPORT

Wilhelm Schuster, Neubauzeile 57, A 4020 Linz-Donau, Austria

Filed Jun. 22, 1979, Ser. No. 51,238
Claims priority, application Austria, Jun. 23, 1978, 4599/78
Int. Cl.³ A47C 7/46
U.S. Cl. 297—284 10 Claims



1. A flexible elastic supporting structure comprising:

an elongate flexible and longitudinally substantially inextensible and incompressible band forming a support belt;

an elongate flexible and generally flat element forming a tension belt secured at one end thereof to a corresponding end of said band, said support and tension belts having mutually confronting broad sides and being generally parallel to and coextensive with each other;

adjustment means engaging the other ends of said belts for relatively shifting same longitudinally while maintaining said tension belt under stress whereby a convex curvature away from said tension belt is imparted to said support belt;

a plurality of distance-maintaining pieces engaging said belts at longitudinally separated intermediate locations for keeping said belts spaced apart transversely to said confronting sides by predetermined distances at said intermediate locations, several of said pieces being slidable along said belts;

a substantially inextensible and incompressible link interconnecting said slidable pieces; and

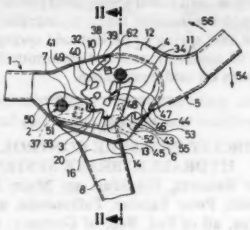
an operating member mechanically connected with said link for jointly displacing said slidable pieces longitudinally of said belts to shift said convex curvature.

4,354,710

HINGE FOR A CHAISE AND THE LIKE

Jörg Rauschenberger, Gartenstr. 8, 7144 Asperg, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,735
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925558
Int. Cl.³ A47C 1/025; G05G 5/06
U.S. Cl. 297—356 41 Claims



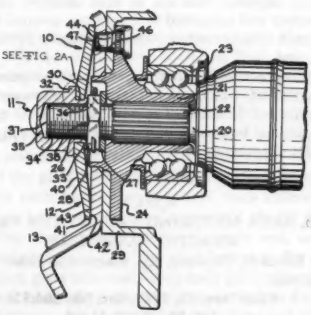
1. A hinge for a chaise and the like, comprising a first hinge element having a segment portion with a plurality of first arresting formations; a second hinge element provided with an arresting member pivotally mounted on the same and pivotable inwardly to its arresting position, said arresting member having control faces and at least one second arresting formation arranged to abut against said first arresting formations; and means for guiding said arresting member in connection with said first hinge element having said segment portion, said guiding means including control projections arranged so as to engage with said control faces of said arresting member, said control projections being associated with individual ones of said first arresting formations of said segment, so that said arresting member is guided during its inward pivoting to its arresting position.

4,354,711

VEHICLE WHEEL ASSEMBLY

John A. Main, Plymouth, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Apr. 21, 1980, Ser. No. 142,486
Int. Cl.³ B60B 27/00
U.S. Cl. 301—9 CN 9 Claims



8. In apparatus for securing a rotating mechanism to a support: a hub mounted on said support, said hub having a flange positioned axially outwardly of said support; said mechanism having a mounting flange in flat abuttment with the axially outer side of said hub flange; a threaded nut which when rotated moves axially toward or away from the axially outer face of said mounting flange; means constructed and arranged

to be restrained against axial movement by said support and on which said nut is threaded: a conical spring with its radially inner end being abutted by said nut and its radially outer end overlying and abutting said mounting flange, said spring having a force versus deflection characteristic wherein the force transmitted increases with deflection during an initial zone of deflection and wherein the force transmitted is generally constant during a subsequent zone of deflection, said mounting flange for said mechanism being in generally uniform flat abuttment around said hub flange; stop means against which said nut abuts to limit initial spring hold down force to an initial value and said mechanism being unrestrained against movement against said spring to deflect said spring into said subsequent zone of generally constant transmitted force to absorb axial overloads on said mechanism.

4,354,712

DUAL-CIRCUIT PRESSURE CONTROL VALVE FOR HYDRAULIC BRAKE SYSTEMS

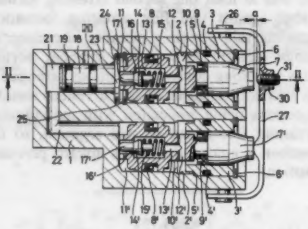
Hans-Dieter Reinartz, Frankfurt am Main; Bernd Schopper, Hattersheim; Peter Tandler, Falkenstein, and Derek Lowe, Glashuetten, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,835

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3004964; Aug. 14, 1980, 3030783; Oct. 8, 1980, 3038004

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **37 Claims**



1. A dual-circuit pressure control valve for hydraulic brake systems comprising:

two control valves disposed in a housing in a parallel side by side relationship, each of said two control valves controlling a different one of two brake circuits, having a control piston disposed between an inlet chamber and an outlet chamber and subjected to a common control force acting on each of said control pistons through a preload distributor; and

means disposed in said housing disposed between said outlet chamber of one of said two control valves and said outlet chamber of the other of said two control valves to provide a hydraulic balancing of the outlet pressure in each of said outlet chambers.

4,354,713

DUAL AREA METERING VALVE WITH VARIABLE REACTION ASSEMBLY

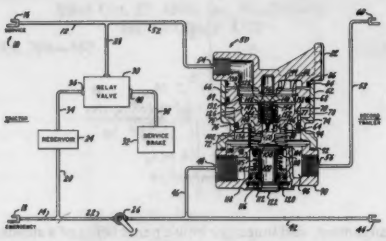
Norman Edwards, Florence, Ky., assignor to Echlin Inc., Branford, Conn.

Filed Nov. 13, 1980, Ser. No. 206,524

Int. Cl.³ B60T *15/02*

U.S. Cl. 303—8 **28 Claims**

15. In an amplifying relay valve of the type having a reaction piston in a bore therein, the movement of said reaction piston being adapted for simultaneous operation of an exhaust valve, said reaction piston defining a service chamber and a delivery chamber in said amplifying relay valve, the improvement comprising a reaction chamber defined in said bore between the ends of said reaction piston, said reaction chamber being in selective communication with said delivery chamber by means adapted to transmit metered pressure from said delivery chamber to said reaction chamber only when the pressure in said



delivery chamber exceeds a predetermined value and to exhaust pressure from said reaction chamber to said delivery chamber whenever the pressure in said reaction chamber is greater than the pressure in said delivery chamber.

4,354,714

HYDRAULIC BRAKE SYSTEM HAVING WHEEL SLIP CONTROL

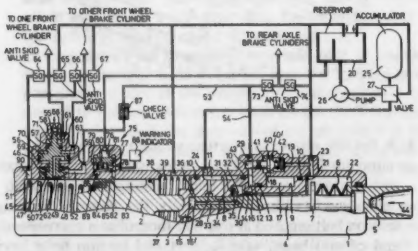
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,215

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942980

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—114 **20 Claims**



1. A hydraulic brake system for a vehicle comprising:

a master cylinder having a pressure chamber;

at least two wheel brake cylinders;

at least two wheel slip control valves each coupled between said pressure chamber and a different one of said two brake cylinders to control the pressure in the associated one of said two brake cylinders independently of the pressure in said pressure chamber in the event of an imminent locked condition of a wheel, the pressure in each of said two brake cylinders being lower than the pressure in said pressure chamber by a predetermined amount; and

a valve device coupled to a pressurized fluid source, said pressure chamber and said two brake cylinders to control fluid flow from said fluid source to said pressure chamber, said valve device being responsive to a differential of pressure between the pressure in said pressure chamber and the pressure of each of said two brake cylinders.

4,354,715

HYDRAULIC ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

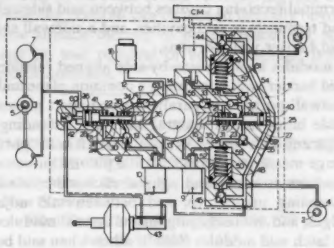
Glyn P. R. Farr, Wootton, and Ivan Mortimer, Solihull, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 14, 1980, Ser. No. 178,382

Claims priority, application United Kingdom, Aug. 14, 1979, 7928206; Aug. 18, 1979, 7928847; Jul. 24, 1980, 8024203

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—116 **21 Claims**



1. An hydraulic anti-skid system for a vehicle comprising a vehicle brake, a supply of operating fluid for applying said brake, skid sensing means for producing a skid signal to modulate the supply of operating fluid from said supply to said brake, a pump having a piston assembly, a drive mechanism for said pump, and means defining a stop chamber, said piston assembly comprising a pump plunger reciprocable in a bore by means of said drive mechanism, a signal piston, a coupling between said signal piston and said pump plunger, and resilient means for urging said pump plunger out of engagement with said drive mechanism, said signal piston having a first area which is exposed to pressure from said supply or from said brake when said brake is applied to urge said signal piston in a direction such that said pump plunger can engage with said drive mechanism, and a dump valve for controlling fluid in said stop chamber to which said piston assembly is exposed at least after said brake has been applied, said dump valve being normally closed to trap fluid in said stop chamber in order to hold said piston assembly in a retracted position in which said pump plunger is disengaged from said drive mechanism, and said dump valve being movable into an open position in response to said skid signal to release fluid from said drive mechanism.

4,354,716

HYDRAULIC BRAKE-ACTUATING DEVICE

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,551

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948428

Int. Cl.³ B60T *13/14, 8/02*

U.S. Cl. 303—119 **27 Claims**

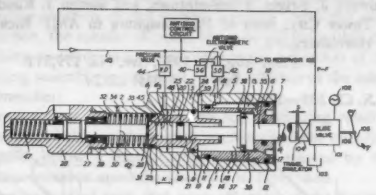
1. A hydraulic brake-actuating device for vehicles having an antiskid unit comprising:

a source of pressure fluid;

a housing containing therein a control chamber defined on one side thereof by a pressure piston acting on a master cylinder piston and a valve arrangement disposed between said source and said control chamber controlled by a brake pedal to couple pressure fluid from said source to said control chamber, said pressure piston being operated by said brake pedal when said source fails;

an additional piston disposed in said control chamber spaced from said pressure piston; and

a pressure fluid connection from said source to said control chamber controlled by said additional piston, said connection being open when said additional piston is in a given



inactive position and said connection being closed when said additional piston moves from said inactive position.

4,354,717

PROCESS FOR THE PRODUCTION OF GAS DISCHARGE LAMPS

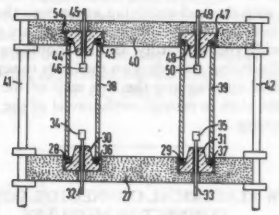
Werner Rech, Taunusstein; Wolfgang Welsch, Wiesbaden, and Josef Zimlich, Taunusstein, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden-Dotzheim, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,262

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713611

Int. Cl.³ H01J *9/24, 9/38*

U.S. Cl. 316—19 **5 Claims**



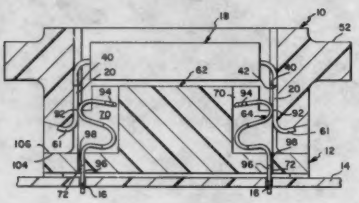
1. A process for a simultaneous production of a plurality of gas discharge lamps particularly useful as flash tubes, each lamp comprising a glass tube containing at least two electrodes and an inert gas with a preformed, sintered glass body sealed into each end of the tube, each of said bodies having at least one electrical connector pin or an electrode extending therethrough in a sealed fashion, said process comprising providing a plurality of the glass tubes, providing a preformed, sintered glass body for each end of the glass tube, each sintered glass body having at least one electrical connector pin for an electrode extending therethrough with a gas tight seal, and then simultaneously sealing each of the glass bodies in the respective end of each glass tube and filling each glass tube with the desired amount of inert gas prior to completing the formation of the seals between the ends of each glass tube and the glass bodies, the step of sealing and filling including soldering by providing a glass solder between the glass body and the end of its tube, and heating the solder to cause melting of the glass solder to form a solder seal and including applying an additional material between at least one of the glass bodies and the end of its glass tube to secure the one body to the glass tube in addition to soldering.

4,354,718

DUAL-IN-LINE PACKAGE CARRIER AND SOCKET ASSEMBLY

Edward J. Bright, Elizabethtown, and Steven J. Kandybowski, Tower City, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 18, 1980, Ser. No. 179,371
Int. Cl.[3] H01R *13/24*
U.S. Cl. 339—17 CF 9 Claims



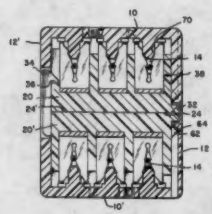
1. A protective carrier for a DIP of the type having depending leads emerging from opposing sides with each lead having laterally positioned, downwardly facing shoulders, said protective carrier comprising a frame consisting of spaced apart, opposing side walls joined by end walls, said side and end walls defining a DIP-receiving central opening therebetween, the inside surfaces of the opposing side walls being stepped with the upper section extending further into the central opening relative to the lower section, a plurality of lead-receiving grooves spaced along the upper sections of the side walls with the grooves having an upper wide portion and a lower narrow portion with the juncture therebetween defining an upwardly facing shoulder on each side of the entrance to the narrow portion, and a plurality of downwardly opened slots provided through the lower section of the side walls, said slots being in alignment with the lead-receiving grooves so that upon inserting a DIP into the central opening, the leads are received in the grooves with the upwardly facing shoulders abutting the downwardly facing shoulders on the leads to support the DIP in the central opening and the free ends of the leads may be bent into the slots to restrain withdrawal of the DIP from the central opening.

4,354,719

TWO-ROW ELECTRICAL CONNECTOR COMPOSED OF CONNECTOR MODULES

Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 22, 1980, Ser. No. 189,532
Int. Cl.[3] H01R *11/20, 33/76*
U.S. Cl. 339—59 M 8 Claims



1. A pair of connector modules which, when assembled to each other, form a two row electrical connector of the type comprising an insulating housing having a mating face and wire entry face, said faces being oppositely directed, spaced-apart endwalls and spaced-apart sidewalls extending between said faces, a plurality of terminal receiving cavities extending through said housing from said wire entry face to said mating face and a contact terminal in each of said cavities, said cavities and said terminals being arranged in two parallel rows which extend between said endwalls, said cavities and terminals in each row being in alignment with said cavities and terminals in the other row, said connector modules being characterized in that:

each of said modules comprises a molded housing module having a continuous planar barrier wall portion and having endwall portions extending from said barrier wall portions at the ends thereof, a single row of side-by-side terminal receiving cavities between said sidewall portions and terminals in said cavities, and a sidewall spaced from said barrier wall portions,

said modules being in side-by-side aligned relationship with said barrier wall portions in a common plane and with said endwall portions in parallel spaced-apart planes,

flexible hinge means integral with, and extending between, adjacent side edges of said barrier wall portions, said hinge means permitting relative pivotal movement of said modules towards and against each other about an axis extending parallel to, and between said adjacent side edges, and interengaging means on said modules effective to latch said modules to each other when said barrier wall portions are against each other whereby,

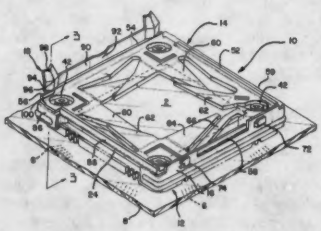
wires can be connected to said wire receiving portions of said terminal while said modules are in side-by-side relationship, and said modules can be thereafter be pivotally moved towards each other and latched to each other to form said two row connector, said barrier wall portions being against each other after pivotal movement of said modules towards each other and forming a barrier wall between said two rows.

4,354,720

CONNECTOR ASSEMBLY HAVING IMPROVED LATCHING MEANS

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 20, 1980, Ser. No. 198,675
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—91 R 6 Claims



1. A connector assembly for establishing electrical connections with terminal pads on one surface of the substrate of an IC package, said connector assembly comprising a housing having an IC receiving face and laterally directed external side surfaces which extend normally of said IC receiving face, contact terminals in said housing which bear against said terminal pads of a substrate positioned on said face, a flat clamping lid in covering relationship to said IC receiving face for clamping said substrate against said contact terminals, and retaining means on said housing for removably holding said clamping lid on said housing, said connector assembly being characterized in that:

said retaining means comprises a pair of resilient sheet metal latch arms which are mounted on said housing proximate to one of said side surfaces and proximate to said IC receiving face of said housing, said latch arms comprising

cantilever beams which extend in opposite direction alongside said one side surface of said housing.

said latch arms each having a retaining portion on its end disposed in a plane which is normal to the plane of said IC receiving face and which extends partially over marginal portions of said IC receiving face,

said retaining portions having edge portions, defined by the thickness of said sheet metal latch arms, which are engagable with said clamping lid to retain said lid on said housing,

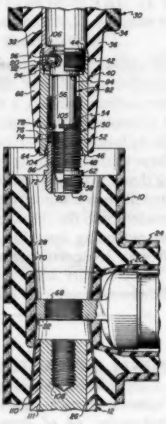
said latch arms being flexible normally of their own planes and parallel to the plane of said IC receiving face whereby said retaining portions can be moved laterally beyond said one side surface thereby to permit placement of an IC package in, and removal of an IC package from, said connector assembly.

4,354,721

ATTACHMENT ARRANGEMENT FOR HIGH VOLTAGE ELECTRICAL CONNECTOR

Glenn J. Luzzi, Mount Bethel, Pa., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,779
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 R **21 Claims**



1. An attachment arrangement for facilitating attaching and securing a bushing assembly within an electrical connector of a high voltage electrical distribution system, the electrical connector having an axially extending recess including a tapered portion, a terminal contact affixed to a conductor of a high voltage cable and including a portion extending into the recess, the terminal contact having a threaded aperture placed within the recess and aligned axially with the tapered portion of the recess, the bushing assembly including an axially extending tapered body portion complementary to the tapered portion of the recess in the electrical connector such that the complementary tapered portion will be engaged in an appropriate interference fit, the tapered body portion terminating at a terminal end, said attachment arrangement comprising:

a tubular member extending in an axial direction within the bushing assembly adjacent the terminal end thereof and having an axially extending internal thread therein;

a coupling member coupled with the tubular member and projecting axially beyond the terminal end of the tapered body portion of the bushing assembly, the coupling member including a first external thread at least a portion of which is spaced axially away from the tubular member for engaging the threaded aperture of the terminal contact, and a second external thread engaged with the internal thread of the tubular member;

wrenching means associated with the tubular member for enabling rotation of the tubular member about the axial direction, the tubular member being so affixed within the bushing assembly as to assure concomitant rotation of the bushing assembly in response to said rotation of the tubular member;

minimum torque responsive means for precluding relative movement between the tubular member and the coupling member below a predetermined torque exerted by the tubular member upon the coupling member; and

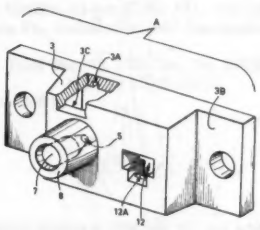
stop means located such that upon insertion of the bushing assembly into the recess of the electrical connector and initial rotation of the bushing assembly, the coupling member will rotate with the bushing assembly, and the first external thread of the coupling member will be engaged within the threaded aperture of the terminal contact prior to the engagement of the complementary tapered portions in said interference fit, and continued rotation of the bushing member, as enabled by the wrenching means, will exceed the predetermined torque of the minimum torque means to further engage the second thread within the internal thread of the tubular member until the complementary tapered portions are engaged fully in said interference fit and proper electrical contact is made between the tubular member and the terminal contact.

4,354,722

TERMINAL CONNECTOR DEVICE FOR ELECTRICAL CONDUCTING WIRES

Henri Morel, Maule, France, assignor to ITW de France, Beauchamp, France

Filed Jun. 3, 1980, Ser. No. 156,142
Claims priority, application France, Jun. 5, 1979, 79 14290
Int. Cl.³ H01R *4/29*
U.S. Cl. 339—95 D **11 Claims**



1. Terminal connector for electrical wires, said connector comprising:

a casing;

a wire entrance formed in said casing;

a wire receiving support arranged in said casing;

an actuating button;

a lateral flexible strip of said actuating button;

a notch formed on said flexible strip;

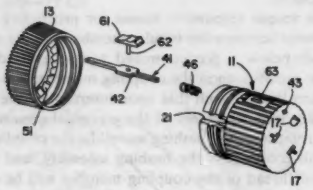
a movable flap for interposing between said entrance and said receiving support and for lateral wedging of the wire, which flap is operable by said actuating button;

a complementary notch formed on said casing, said notches constituting locking means to hold said button and said flap in a retracted position permitting introduction of the wire.

4,354,723
ELECTRIC PLUG

Hop Lee, 2455 - 24th Ave., San Francisco, Calif. 94116

Continuation-in-part of Ser. No. 63,393, Aug. 3, 1979, Pat. No. 4,293,178. This application Nov. 28, 1980, Ser. No. 211,429
Int. Cl.³ H01R *13/58, 13/62*
U.S. Cl. 339—103 R 4 Claims



1. An improved electrical plug having a body with a cap threaded on the rear thereof and engaging a retaining collar about an electric cord comprising

a ratchet pin slidably mounted in said body and having a spring urging the pin outwardly from the rear of the body,

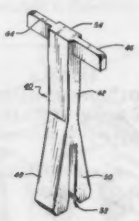
said cap having interior ratchet teeth facing said body in position for engagement with said ratchet pin whereby said pin rides over said teeth during threading of the cap on the body and locks with said teeth for reverse cap rotation, and

release means extending exteriorly of said body for depressing said ratchet pin to retract same from engaging the teeth on said cap and release the cap for unthreading from the body.

4,354,724
CIRCUIT BOARD CONNECTOR INDEXING KEY

Howard I. Jarmy, San Francisco, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,079
Int. Cl.³ H01R *13/645*
U.S. Cl. 339—186 R 1 Claim



1. An indexing key for use with a circuit board connector strip of the type having an elongate opening for receiving the end of a circuit board, having a series of contiguous locations therealong at which resilient electrical contacts may be placed for electrical/mechanical contact with an inserted circuit board, having indexing slots along the top thereof spaced at predetermined intervals for receiving indexing keys, and having an associated support surface to provide a mechanical connection to a circuit board, the key comprising:

(a) a body dimensioned so as to fit in said elongate opening;

(b) at least one key arm in association with said body for insertable engagement with an indexing slot;

(c) said body comprising an elongate body wherein the bottom of said body is capable of resting on said support surface with said key arm engaged in an indexing slot;

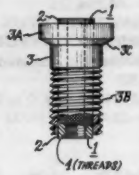
(d) said circuit board connector strip further comprising divider walls separating said contiguous locations within said connector strip wherein said elongate body further comprises a pair of leg portions for straddling one of said divider walls when said key is inserted in place in said connector strip; and

(e) means integral with said body for causing said body to bear the force of the end of a circuit board being forced thereagainst by way of compression between said support surface and said circuit board.

4,354,725
INSULATED TERMINAL ASSEMBLY

Donald W. Herbaugh; Paul J. Kline, and Herbert C. Stull, all of Erie, Pa., assignors to General Electric Co., Schenectady, N.Y.

Continuation-in-part of Ser. No. 142,555, Apr. 21, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,765
Int. Cl.³ H01R *9/10*
U.S. Cl. 339—214 R 15 Claims

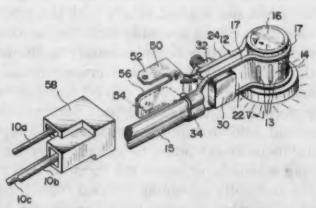


1. An insulated electric terminal assembly comprising an electrically conductive metal stud having a predetermined portion of its outer surface knurled, a threaded dielectric bolt mounted in fixed relationship with said stud with an irregular inner surface of the bolt positioned in locking engagement with said knurled surface, said bolt having on one end a head with a diameter greater than the diameter of the threaded part of the bolt, and a threaded dielectric nut formed with threads that are adapted to be threaded onto the threaded part of said bolt, said threaded bolt and nut being operable responsive to the bolt being inserted through an aperture in an electrically conductive member to mechanically secure said stud in fixed and dielectrically isolated relationship to said conductive member.

4,354,726
BATTERY TERMINAL CONNECTOR WITH AN UNEVEN INTERIOR SURFACE

Shinichi Kato, Fujisawa; Syuichi Otani, Tokyo, and Susumu Hashimoto, Kitakawabe, all of Japan, assignors to Nissan Motor Company, Limited, Yokahama, Japan

Filed Mar. 18, 1980, Ser. No. 131,093
Claims priority, application Japan, Mar. 20, 1979, 54-36094[U]; Mar. 20, 1979, 54-36097[U]
Int. Cl.³ H01R *11/26*
U.S. Cl. 339—230 R 12 Claims



1. A battery terminal connecting device, for connecting a battery terminal to an electric cable, comprising:

a gripping portion formed of elastically deformable and electrically conductive material in the shape of a hollow shell

having an axially extending slot formed therein to permit the shell to open and close;

a pair of extensions from the gripping portion, each extension extending outwardly from one side of the slot, which extensions extend generally in the same direction, and to one of which extensions the cable is coupled, one of said extensions being formed with a protruding portion which projects towards the other extension and which elastically prevents the extensions from approaching closer than a predetermined distance by acting as a fulcrum around which said extensions must bend in order for said gripping portion to be further tightened after said extensions approach said predetermined distance;

a means for biasing the extensions towards one another; and

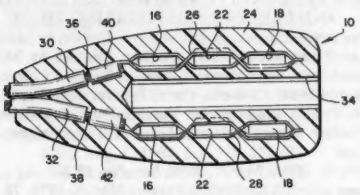
a plurality of high portions and low portions formed on the inner surface of said gripping portion, the low portions of which interrupt contact between the inner surface of said gripping portion and the battery terminal so that said inner surface of said gripping portion is constricted onto the periphery of said battery terminal with a contact area substantially less than the total area of the inner surface when said gripping portion is disposed around the battery terminal and closely contacted therewith by the extensions being biased towards one another by the biasing means thereby deforming the gripping portion.

4,354,727

CONTACT STRIP FOR ELECTRICAL CONNECTOR

Donald C. Brown, Westfield, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Filed Aug. 15, 1980, Ser. No. 178,443
Int. Cl.³ H01R *19/28*
U.S. Cl. 339—256 R **7 Claims**



1. A contact strip for defining a plurality of openings adapted for the insertion thereinto of blades of electrical attachment plugs comprising:

a metallic strip;

a connector on said metallic strip for connection to a metallic conductor;

first and second complementary longitudinal slits through said metallic strip defining a first central contact strip and first and second side contact strips adjacent opposite sides of said first central contact strip;

said first central contact strip being deformed in a first direction with respect to a surface of said metallic strip;

said first and second side contact strips being deformed in a second direction with respect to said surface of said metallic strip, said second direction being opposite to said first direction whereby a first of said openings is formed into which one first of said blades may be inserted with one surface thereof in contact with said first central contact strip and a second opposed surface thereof in contact with both of said first and second side contact strips;

third and fourth complementary longitudinal slits through said metallic strip defining a second central contact strip and third and fourth side contact strips adjacent opposite sides of said second central contact strip;

said second central contact strip being deformed in one of said first and second directions;

said third and fourth side contact strips being deformed in the other of said first and second directions whereby a second of said openings is formed into which a second of said blades may be inserted;

adjacent ends of said first and third and said second and fourth slits ending along a single line transverse to a longitudinal dimension of said metallic strip;

said first and second and said third and fourth slits being mirror symmetric with respect to a longitudinal axis of symmetry of said metallic strip; and

means for laterally offsetting ends of said third and fourth slits from adjacent ends of said first and second slits.

4,354,728

ELECTRICAL CONTACTOR FOR TERMINAL PIN

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025

Filed Apr. 1, 1980, Ser. No. 136,258
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—256 S **5 Claims**

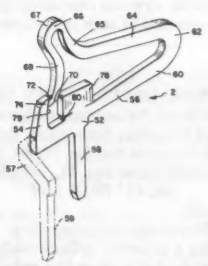
1. An electrical contact assembly comprising: a rigid electric terminal pin; an electrical connector to serve as a soldered tab for an electric wire to be connected to said terminal pin, said connector being formed of a resilient electrically-conductive material to which solder may be rigidly bonded and having a coiled portion adapted to fit over the electrical terminal pin in close fitting coaxial relationship therewith, said coiled portion including a first section wound in one direction and a second section coaxial with the first section and wound in the opposite direction, each of the first and second sections grippingly engaging said rigid terminal pin, and said connector having an exposed central portion shaped to permit an electric wire to be soldered to the connector.

4,354,729

PRELOADED ELECTRICAL CONTACT TERMINAL

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1980, Ser. No. 219,085
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 R **12 Claims**



1. An electrical contact terminal of the type having a contact portion which is intended to contact a mating contact means and spring means for maintaining said contact portion against said mating contact means, said terminal being of the complanate type having substantially all of its parts lying in a single plane, said terminal having a spring arm and a latch arm, said

arms having free ends which are in overlapping latched relationship and which are held in a latched position by latching means which permits movement of said free end of said spring arm in one direction along said latch arm and which prevents movement of said free end of said spring arm in the opposite direction, said contact portion comprising contact edge portions of said spring arm, said terminal being characterized in that:

said latched position of said free end of said spring arm is a displaced position relative to the normal position of said free end of said spring arm, said normal position of said free end of said spring arm being adjacent to, and beyond, said free end of said latch arm,

said spring arm being in a pre-stressed and flexed condition as a result of the displacement of said free end of said spring arm, and

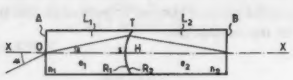
said free end of said spring arm being resiliently biased against said latch arm whereby, upon movement of said mating contact means against said contact portion of said spring arm, said free end of said spring arm is moved in said one direction along said latch arm with accompanying further flexing of said spring arm and with a resulting development of a predetermined contact force at the interface of said contact portion and said mating contact means and current flows from said contact portion through said interface thence through said latch arm.

4,354,730

OPTICAL RELAY USED FOR TRANSFERRING AN IMAGE FROM ONE POINT TO ANOTHER ALONG AN OPTICAL AXIS

Roger P. Bel, Vincennes, France, assignor to Metallisations et Traitements Optiques M.T.O., France

Filed Jun. 24, 1980, Ser. No. 162,450
Claims priority, application France, Jun. 25, 1979, 79 16266
Int. Cl.³ G02B *23/00*
U.S. Cl. 350—54 **9 Claims**



1. An optical relay used for transferring an image from one point to another along an optical axis comprising two optical systems each formed from at least two thick optical elements, one of which is convergent and the other divergent, the index, thickness and the radii of curvature of the optical elements being selected so that the end faces of each of the optical systems formed thereby are conjugate, said systems being connected together by an image conduit of optical fibers which bear against one end face of each of the systems.

4,354,731

SELF-ALIGNING OPTICAL FIBER CONNECTOR

Bob Mouissie, Berlicum, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 78,701, Oct. 2, 1979, abandoned. This application Jun. 11, 1980, Ser. No. 156,452
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **6 Claims**

1. An optical fiber connector comprising:

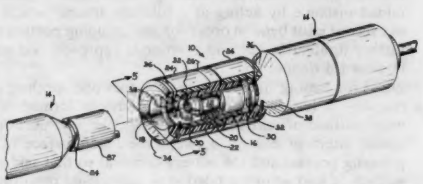
a housing having a generally cylindrical first bore,

at least two opposed ribs extending radially into said first bore and terminating in a hub having a hole coaxial with said first bore,

a pair of sleeves mounted on said housing in opposed relationship, said sleeves terminating in an inwardly projecting peripheral edge defining an opening to said housing coaxial with said first bore, said peripheral edge forming an annular cavity with said housing,

a resilient O-ring located in said annular cavity having an inside diameter slightly less than said first bore,

at least one pair of slightly elongated half-round holding members pivotally mounted in said hole, said holding members having a flat surface in opposed mating relationship, said surfaces having an opposed longitudinal V-groove defining a second bore coaxial with said first bore,



said second bore having a conically inclined convergent surface on either end thereof defining an entrance to receive the exposed core end of an optical fiber,

means for guiding the ends of an optical fiber into said second bore, and

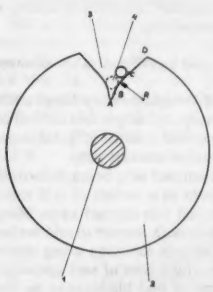
means for elastically maintaining said holding members in opposed relationship.

4,354,732

CABLE ELEMENTS COMPRISING OPTICAL FIBRES AND CABLES INCORPORATING THEM

Maurice Arnaud, deceased, late of Paris, France; by Marie C. N. A. Avril nee Arnaud, heir, Quebec, Canada; by Michel F. Arnaud, heir, Saint-Pardoux, France; Bernard Chiron, Paris, France; Claude Gallachi, Paris, France; Jean-Pierre Hulin, Paris, France, and Michel de Vecchis, Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 7, 1979, Ser. No. 18,269
Claims priority, application France, Mar. 8, 1978, 78 06598
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **5 Claims**



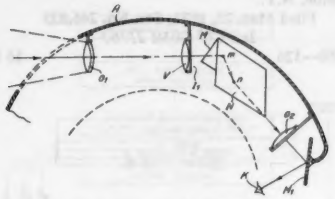
1. An optical fibre cable element comprising a mechanical core; a cylindrical sheath surrounding the core and containing helical grooves of V-shape in cross section in its surface, each groove being bounded by a pair of flanks which are curved convexly toward the interior of the groove over only portions of their lengths; a single undulating optical fibre in each groove resting alternately on the curved portions of the flanks and held thereby spaced from the bottom of the groove; and at least one taping around the sheath.

4,354,733

REARVIEW DEVICE INCORPORABLE IN HELMETS

Jean M. Picquet; Lambert Picquet, and Roger Cuvillier, all of 4 Square de l'avenue du Bois, Paris 75116, France

Continuation-in-part of Ser. No. 48,861, Jun. 15, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 193,991
Int. Cl.³ G02B 23/02
U.S. Cl. 350—51 7 Claims



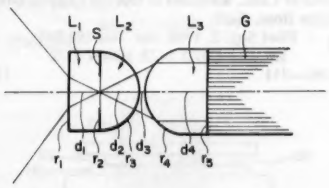
1. A rearview device for a helmet, comprising an optical system mountable on said helmet and including an objective lens which, in use, is directed rearwardly of the wearer of the helmet for receiving light from an object to the rear of the wearer and forming an image of said object, an eyepiece lens for enabling the wearer of the helmet to view said image, and laterally and vertically inverting reflector means in the path of light rays passing through said objective lens and said eyepiece lens so that the image of said rearview object that is viewed by the wearer of the helmet is erect and without inversion, in which the reflector means includes two plane reflectors disposed perpendicular to each other and meeting in a line which lies in a plane substantially parallel to and spaced from a plane in which the optical axis of the objective lens lies.

4,354,734

OBJECTIVE OPTICAL SYSTEM FOR ENDOSCOPES

Ken-ichi Nakahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,697
Claims priority, application Japan, Aug. 7, 1979, 54-100626
Int. Cl.³ A61B 1/00; G02B 13/22
U.S. Cl. 350—96.26 8 Claims



1. An objective optical system for endoscopes comprising an objective and an image-transmitting optical fiber bundle for transmitting an image of an object formed by said objective, said objective comprising a first lens component consisting of a cover glass and plano-convex lens cemented together by arranging a stop between them and a second lens component consisting of a plano-convex lens arranged convex toward the objective side, said objective optical system for endoscopes satisfying the following conditions:

$$0.7|r_3| \leqq d_2 \leqq 1.1|r_3| \quad (1)$$

$$n_2 \geqq 1.75 \quad (2)$$

$$0.6\times(n_3-1)(d_2+d_3) \leqq r_4 \leqq 1.4\times(n_3-1)(d_2+d_3) \quad (3)$$

$$n_3 \geqq 1.75 \quad (4)$$

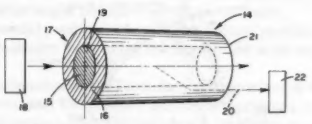
wherein the reference symbol r_3 represents the radius of curvature of the surface on the image side of the first lens component, reference symbol r_4 represents the radius of curvature of the surface on the object side of the second lens component, reference symbol d_2 represents the thickness of the plano-convex lens constituting the first lens component, reference symbol d_3 represents the airspace between the first and second lens components, reference symbol n_2 represents the refractive index of the plano-convex lens constituting the first lens component, and reference symbol n_3 represents the refractive index of the second lens component.

4,354,735

OPTICAL TRANSDUCER

David W. Stowe, Buffalo Grove, Ill.; John D. Christian, deceased, late of Warrenville, Ill.; Albert Christian, heir; Martha R. Christian, heir, both of Indianapolis, Ind.; Ann L. Ziegler, heir, Danville, Ind., and David A. Christian, heir, Indianapolis, Ind., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 26, 1979, Ser. No. 106,761
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.29 7 Claims



5. In an optical transducer (14) including an optical fiber core (15) having a first refractive index profile, and an optical cladding (16) encircling said core and having a second refractive index profile different from that of said optical core, the improvement comprising:

at least one of said core and cladding being formed of a suitable photoresponsive material for providing a variable difference between the refractive indices of said core and cladding as a function of an electromagnetic field applied to said transducer, thereby to variably couple light from the core to the cladding in accordance with said applied electromagnetic field;

means (18) for transmitting light through said core; and

means (22) for detecting the amount of decrease in the light propagated through said core (15) as a result of coupling of light therefrom to said cladding (16).

4,354,736

STRESS-INDUCED BIREFRINGENT SINGLE MODE OPTICAL FIBER AND A METHOD OF FABRICATING THE SAME

Mokhtar S. Maklad, Milford, Conn.; Francis I. Akers, Roanoke, Va., and William L. Thomas, Midvale, Utah, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

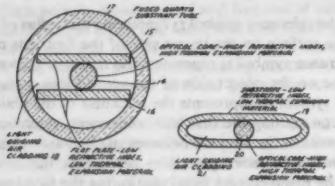
Filed Jun. 18, 1980, Ser. No. 160,698
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.32 10 Claims

1. A stress-induced birefringent single mode optical fiber comprising:

an optical core having a high refractive index and a high thermal expansion coefficient;

means formed from an optical material having a low refractive index and a low thermal expansion coefficient engaging the outer surface of said core tangentially at opposite

ends of a diameter of said core to establish a stress therein; and



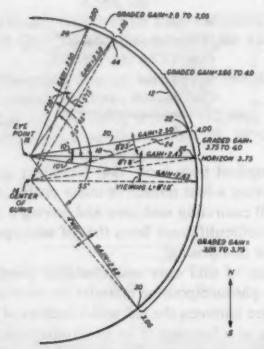
air encompassing the remainder of the outer surface of said core to provide a light guiding cladding.

4,354,737

VARIABLE GAIN SCREEN PERMITTING OFF-AXIS VIEWING WITH IMAGE BRIGHTNESS REMAINING CONSTANT

Martin Dotsko; Robert E. Klemm, both of Binghamton, and David L. Peters, Whitney Point, all of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,968
Int. Cl.³ G03B *21/56*
U.S. Cl. 350—117 **4 Claims**



1. An off-axis viewing system that includes a non-Lambertian screen surface to provide an off-axis viewer with constant image brightness as measured by an equivalent gain, independent of changes of a viewing angle, comprising:

a projector positioned at a first location to provide a projected image on said screen surface;

means to define a second location which is displaced from said first location, which second location receives substantially all of the reflected light of said projected image;

means to determine an off-axis viewing angle, said angle defined by a first ray that begins at said first location and ends at a third location on said screen surface, and by a second ray that begins at said second location and ends at said third location;

a first portion of screen surface encompassing a first predetermined area located at a first viewing angle and having a seleced first screen gain magnitude as measured from the normal of said screen surface;

a second portion of screen surface encompassing a second predetermined area located at a second viewing angle and having a selected second different screen gain magnitude as measured from the normal of said screen surface;

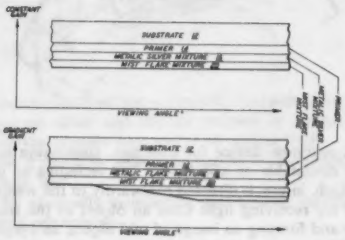
said selected first and second screen gain magnitudes each greater than said equivalent gain to provide compensation for the diminution in image brightness caused by the variance of a viewing angle from the normal, whereby said system provides the off-axis viewer with constant image brightness independent of changes of the viewing angle.

4,354,738

FRONT PROJECTION SCREEN WITH PRECISION GAIN CONTROL

Frederic N. Forehand, Apalachin, and Richard A. Mecklenborg, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,825
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—126 **16 Claims**



1. A screen surface for use on a substrate for providing a front projection screen of selective peak gain, comprising:

(a) a liquid metallic silver mixture comprising a lacquer binder component, a mixing color agent component, and a flattening agent component.

10. A method for constructing a front projection screen comprising the steps of:

(a) providing a substrate;

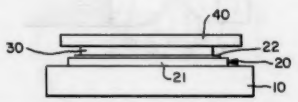
(b) applying a liquid metallic silver mixture to said substrate, said silver mixture comprising a lacquer binder component, a mixing color agent component, and a flattening agent component.

4,354,739

COLOR ABSORPTION-TYPE FILTER AND METHOD OF MAKING

Robert T. Scanlon, Santa Rosa, and Robert M. Gelber, Sebastapol, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Sep. 3, 1980, Ser. No. 183,849
Int. Cl.³ G02B *5/22*; H04N *5/72*
U.S. Cl. 350—311 **11 Claims**



1. A method of producing a color absorption-type contrast enhancement filter comprising the steps of:

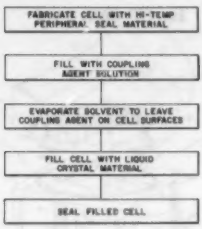
exposing a sheet of positive color transparency film uniformly across its entire area to at least one source of light having wavelength components in the visible spectrum preselected in accordance with the required optical response characteristic of said filter; and

developing said film to produce a filter element which is substantially transmissive for said preselected wavelength components and highly absorptive for other wavelength components of the visible spectrum across said entire area of said film.

4,354,740
SURFACE ALIGNMENT PROCESS FOR LIQUID CRYSTAL DISPLAYS

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1980, Ser. No. 152,741
Int. Cl.³ G02F 1/13
U.S. Cl. 350—340 22 Claims


FABRICATE CELL WITH HI-TEMP PERIPHERAL SEAL MATERIAL
FILL WITH COUPLING AGENT SOLUTION
EVAPORATE SOLVENT TO LEAVE COUPLING AGENT ON CELL SURFACES
FILL CELL WITH LIQUID CRYSTAL MATERIAL
SEAL FILLED CELL

1. A method for providing, in one display condition, homeotropic alignment to liquid crystal material filling a display cell, comprising the steps of:

(a) providing an empty cell having a fill hole communicating to an empty cavity therein;

(b) dissolving a surfactant, selected to provide homeotropic alignment, in a volatile carrier solvent;

(c) filling the cell cavity with the solution;

(d) evaporating the volatile carrier solvent to deposit the surfactant on the interior cell cavity surfaces;

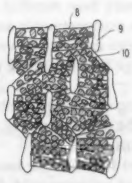
(e) filling the cell cavity with the liquid crystal material, said liquid crystal material being essentially devoid of any surfactants; and

(f) sealing the fill hole.

4,354,741
ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Mano, and Satsuki Kawauchi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 10, 1980, Ser. No. 185,844
Claims priority, application Japan, Oct. 12, 1979, 54-132038; Oct. 23, 1979, 54-136927
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 13 Claims

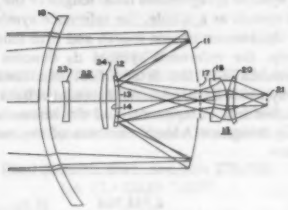


1. An electrochromic display device comprising: a display electrode; a confronting electrode; and an electrolyte-impregnated porous member disposed between said electrodes, said porous member having an average pore diameter of 0.1 to 50 μm, porous spaces occupying at least 30% by volume of said porous member; and at least pigment being held in said porous spaces, said pigment occupying 1 to 50% by volume of said porous spaces; and wherein said porous member comprises a material having a microstructure made up of fibrils and nodes formed by connecting said fibrils.

4,354,742
OPTICAL SYSTEM HAVING A DUAL FIELD OF VIEW

Irving R. Abel, Lexington, and Marcus R. Hatch, Arlington, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1980, Ser. No. 205,365
Int. Cl.³ G02B 17/08
U.S. Cl. 350—442 16 Claims



1. An optical system having a duel field of view comprising:

a wide-angle objective comprising a lens;

a concave primary mirror;

a movable convex secondary mirror having a first position and a second position;

the secondary mirror when in the first position permitting the wide-angle objective to focus radiation;

the secondary mirror when in the second position preventing radiation from being focused by the wide-angle objective;

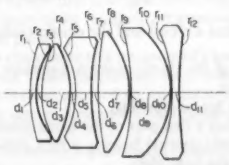
the combination of the secondary mirror when in the second position and the primary mirror comprising a narrow-angle objective with the primary mirror converging radiation to the secondary mirror and the secondary mirror focusing radiation;

whereby the optical system has a wide-angle field of view whenever the secondary mirror is in the first position, and a narrow-angle field of view whenever the secondary mirror is in the second position.

4,354,743
ATTACHMENT LENS SYSTEM

Shin'ichi Mihara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,449
Claims priority, application Japan, Sep. 18, 1979, 54/119831
Int. Cl.³ G02B 9/62, 11/32
U.S. Cl. 350—464 8 Claims



1. An attachment lens system comprising a front lens group consisting of a first negative meniscus lens component having a convex surface on the object side, a second biconvex lens component and a third biconcave lens component, and a rear lens group consisting of a fourth biconvex lens component, a fifth positive meniscus lens component having a concave surface on the object side and a sixth biconcave lens component, said lens system being so designed as to satisfy the following conditions:

(1) $f_F<0$, $f_R>0$

(2) $0.25<|f_{45}/f_0|<0.32$

(3) $0.16<(d_7+d_8+d_9)/|f_0|<0.21$
(4) $1.4<n_2, n_4, n_5<1.6$
$1.7<n_1, n_3, n_6<1.9$
(5) $30<\nu_2, \nu_4, \nu_5<51.5$
$37<\nu_1, \nu_3, \nu_6<51$

wherein the reference symbol f_F represent focal length of said front lens group, the reference symbol f_R designates focal length of said rear lens group, the reference symbol f_{45} denotes total focal length of said fourth and fifth lens components, the reference symbol f_0 represents focal length of the entire attachment lens system as a whole, the reference symbols d_7 and d_9 designate thicknesses of said fourth and fifth lens components respectively, the reference symbol d_8 denotes airspace reserved between said fourth and fifth lens components, the reference symbols n_1 through n_6 represent refractive indices of the respective lens components and the reference symbols ν_1 through ν_6 designate Abbe's numbers of the respective lens components.

4,354,744

FRAME FOR EYEGLASSES

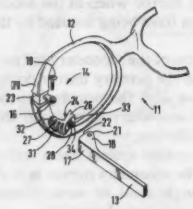
Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 186,893

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938492

Int. Cl.³ G02C *5/14, 5/22*

U.S. Cl. 351—153 **5 Claims**



1. An optical frame comprising a lens bow, two temples, hinge joints connecting the temples to the lens bow; each temple having a stop face on one end to rest against the lens bow, and an elastic cushion arranged in the region of each hinge joint between the lens bow and the stop face of the temple and wherein:

the elastic cushion comprises a base plate and an elastic portion arranged on the base plate at an angle of less than 90 degrees and overlapping the outside edge of the lens bow,

the lens bow has a recess and the elastic cushion is set in the recess,

the thickness of the elastic cushion is greater than the depth of the recess,

the base plate has an opening,

the lens bow has a first part of the hinge joint thereon in the form of a solid journal bearing which passes through the opening in the base plate,

the end of the temple has a second part of the hinge joint thereon and the base plate has a projection resting under elastic pretension on the second hinge part,

the second hinge part has an arc-shaped braking area and the projection has a concave pressure surface,

the base plate runs parallel to the plane of the lens bow, and

the temple has a straight extension part at its end which, when the temple is open, overlaps the outside edge of the lens bow, the stop face is arranged on the side of the extension part facing towards the outside edge of the lens bow, and the stop face rests on the elastic portion arranged on the base plate to overlap the outside edge of the lens bow.

4,354,745

SLIDE HANDLING APPARATUS

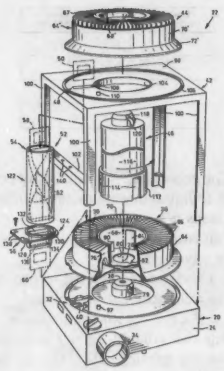
Raymond E. Armstrong, 12 Relmar Rd., Toronto, Ontario, Canada (M5P 2Y5)

Continuation-in-part of Ser. No. 138,770, Apr. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 1,510, Jan. 8, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,097

Claims priority, application European Pat. Off., Jan. 3, 1980, 80300011.6

Int. Cl.³ G03B *23/02*

U.S. Cl. 353—112 **16 Claims**



1. Slide handling apparatus comprising:

means adapted to support a rotary slide tray for turning about a generally upright axis;

means for indexing said tray about said axis;

means adapted to permit the coupling with said indexing means of a second similar tray disposed in a position above and co-axially with the first-mentioned tray so that a said second tray can be indexed in synchronism with the first tray in use;

each said tray including a rotatable tray portion defining a plurality of slide receiving compartments arranged in an annular configuration and having open upper and lower ends, and a stationary base member normally closing said lower ends of the compartments and having an opening through which slides can successively leave the compartments at a discharge position as the tray portion rotates in use;

means for maintaining said base member of the second tray stationary while the associated tray portion is indexed by said coupling means;

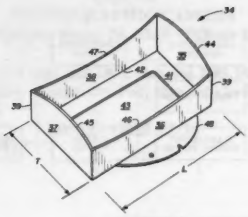
chute means disposed between the two trays and having an upper end disposed adjacent said discharge position for the second tray for receiving slides leaving said second tray, and a lower end arranged to deliver such slides into the first tray, said chute means defining a track down which the slides travel by gravity and which is shaped to turn each slide laterally in travelling along said track to an extent such that the slides enter said first tray in reverse orientation compared with their former orientation in the second tray; and,

said indexing means being operable to index both trays through angular amounts sufficient to bring successive compartments of said first tray to a position below the lower end of said chute.

4,354,746
UNITARY LIGHT SHIELD FOR USE IN COLOR PICTURE TUBE LIGHTHOUSES

Emmanuel T. Sagolili, Midland, and Glenn E. Hall, Wye Vale, both of Canada, assignors to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,081
Int. Cl.³ G03B *41/00*
U.S. Cl. 354—1 **10 Claims**



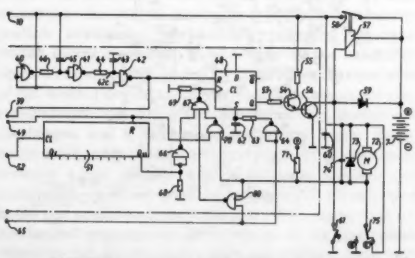
1. A unitary light shield for use with a color picture tube lighthouse comprising

a plurality of substantially planar light opaque side members having one curved edge arranged to form a polygon and affixed to one another at light opaque corners; a light opaque bottom member having a configuration congruent to said polygon and affixed to the edge of said side members opposite said curved edge along light opaque seams, said bottom member including a light transparent aperture similar to said polygon and centered in said bottom whereby light can pass through said aperture and the top of said polygon and is blocked by said side members and said bottom member.

4,354,747
SWITCHING CIRCUIT FOR REGULATION OF CAMERA FUNCTIONS

Kurt Borowski, Aschheim; Reinhard Nicko; Istvan Cocron, both of Munich, and Dieter Engelsmann, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,104
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009011
Int. Cl.³ G03B *1/18, 7/26;* H01H *47/00*
U.S. Cl. 354—23 D **26 Claims**



1. In a circuit for the regulation of at least one camera function such as opening of the camera shutter, film exposure, film transport and the like with at least one control circuit which is energized by a source of potential such as a battery having positive and negative terminals through an operation control switch having a first contact coupled to said source and a second contact coupled to said control circuit, the improvement comprising:

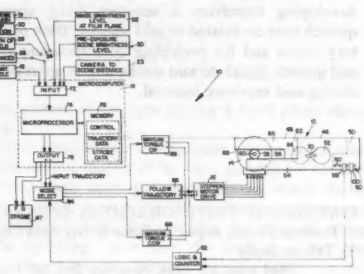
at least one bistable device having a reset input, said device being electrically coupled to said control circuit to establish a predetermined state thereof upon application of a reset signal to said reset input; and

means coupled to said second contact of said operation control switch for generating a reset signal in response to the application of electrical power to said second contact and to bouncing effects between said first and second contacts.

4,354,748
PHOTOGRAPHIC EXPOSURE SYSTEM WITH COMPUTER CONTROLLED STROBE UNIT

Donald L. Grimes, Milford, and Stanley W. Haskell, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 22, 1981, Ser. No. 275,718
Int. Cl.³ G03B *7/097*
U.S. Cl. 354—23 D **16 Claims**



1. An exposure control system usable in a camera for controlling transmission of image-forming light rays from a scene to a film unit located in a film plane during ambient light and strobe flash illumination modes of operation, said system comprising:

a blade mechanism;

means for mounting said blade mechanism for displacement between a first arrangement wherein it blocks transmission of scene light to the film plane and a second arrangement wherein it defines a maximum aperture, said blade mechanism serving to define a range of progressively increasing sized apertures as it moves from its said first arrangement toward its said second arrangement and then a range of progressively decreasing sized apertures as it returns to its said first arrangement during the course of an exposure interval for regulating transmission of scene light to the film plane;

drive means responsive to a program of trajectory signals for driving said blade mechanism in a manner whereby its operation is characterized by an aperture size versus time trajectory curve defined by said program of trajectory signals;

means for connecting a quenchable strobe unit to said system to provide a source of artificial illumination directed toward the scene, the light output of the strobe unit being variable between minimum and maximum output values by adjusting the timing of a quench signal provided to said unit subsequent to its firing;

means selectively operable for setting said system alternately in either its ambient light or strobe flash mode of operation;

means for providing pre-exposure inputs indicative of scene brightness level and camera-to-scene distance; and

control means including a first memory section having a preprogrammed trajectory data base stored therein, said trajectory data base including at least characterizing ele-

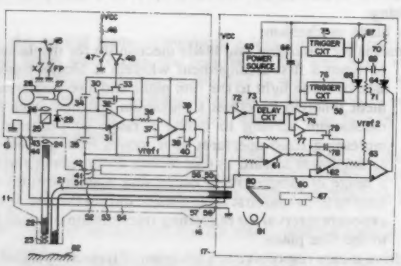
ments of a plurality of different signal programs defining both ambient light and strobe flash mode trajectory curves that are appropriate for differing scene brightness levels, and a second memory section having stored therein a preprogrammed strobe firing aperture and quench time data base correlated to at least one set of flash mode trajectory curves for various combinations of scene brightness and distance, said control means further including means responsive to said brightness input, when said system is set for said ambient light mode, for utilizing said trajectory data base and developing therefrom a program of trajectory signals to provide a selected ambient light trajectory curve appropriate for the indicated scene brightness level, and for feeding said program of trajectory signals to said blade drive means to effect exposure of the film unit, and, when said system is set for said strobe flash mode, for developing and feeding to said blade drive means a program of trajectory signals to provide a selected flash mode trajectory curve appropriate for the indicated scene brightness level, said last-mentioned means also being responsive to both said scene brightness and distance inputs for utilizing said strobe data base and developing therefrom a selected firing aperture and quench time correlated to said selected flash mode trajectory curve and for providing corresponding strobe fire and quench signals to said strobe unit at appropriate times during said exposure interval.

4,354,749

ENDOSCOPIC PHOTOGRAPHING APPARATUS

Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,332
Claims priority, application Japan, Sep. 3, 1980, 55-121879
Int. Cl.³ G03B *29/00*; A61B *1/04*; G03B *15/03*
U.S. Cl. 354—33 **4 Claims**



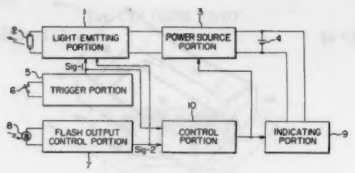
1. An endoscopic photographing apparatus having an endoscope with an eyepiece section, a connector section, a light guide and an image guide, an endoscope camera detachably mounted to the eyepiece section of the endoscope, and a light supply device to which the connector section of the endoscope is detachably coupled, in which said camera comprises a photosensitive element for generating a photoelectric signal corresponding to the intensity of light which enters the camera via said image guide, an exposure calculating circuit for calculating the exposure based on said photoelectric signal from said photosensitive element to output a quenching signal at a predetermined exposure, and high level signal output means for outputting a signal of high level in response to said quenching signal from said exposure calculating circuit to guide this quenching signal to said light source device through a signal line provided in said endoscope.

4,354,750

FLASH UNIT HAVING A FLASH OUTPUT CONTROL DEVICE

Hiroshi Hasegawa, and Osamu Maida, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,012
Claims priority, application Japan, Feb. 5, 1980, 55-12677
Int. Cl.³ G03B *15/02*
U.S. Cl. 354—128 **5 Claims**



1. A flash apparatus comprising:

a power source portion including a battery and a heavy current consuming source;

means for generating a trigger signal for initiating a flash operation;

a flash discharge tube responsive to said trigger signal and using current from said power source portion for producing light to illuminate an object;

flash output control means for metering the light reflected from the object and for terminating light emission from said flash discharge tube when a predetermined quantity of reflected light is received, thereby effecting a flash output control operation; and

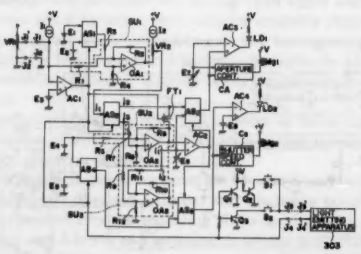
control means responsive to said trigger signal for inhibiting the operation of said heavy current consuming source during said metering.

4,354,751

EXPOSURE SYSTEM FOR A CAMERA

Tatsuro Izumi; Nobuyuki Taniguchi, both of Sakai; Toshiaki Matsumoto, Izumisano; Masatake Niwa, Sakai; Tokuji Ishida, Daito, and Masatoshi Itoh, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 244,924
Claims priority, application Japan, Mar. 18, 1980, 55-35645; Dec. 24, 1980, 55-184883
Int. Cl.³ G03B *7/16, 15/05*
U.S. Cl. 354—139 **15 Claims**



10. An exposure system for a camera comprising:

electronic flash means for projecting an artificial light which flashes for a prolonged period of time and has a predetermined constant light intensity;

means for obtaining an information of distance to the object;

means for setting an information of film speed; and

means for controlling the exposure of the film in response to the predetermined intensity of said prolonged flash light, the

information of distance to the object and the information of film speed.

4,354,752

PHOTOGRAPHIC CAMERA

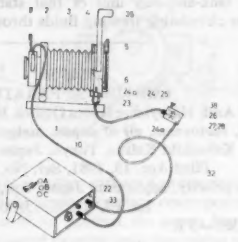
Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,244

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014550

Int. Cl.³ G03B *17/38*

U.S. Cl. 354—232 10 Claims



1. Photographic camera apparatus comprising

a camera having a rear window housing section containing a rear viewing window and a rear receiving portion operatively arranged adjacent the window for removably receiving a separate cassette insertable thereat for cooperating disposition at the window, and a front lens and shutter system housing containing a controllable exposure shutter and a controllable aperture size diaphragm and electromagnetic means for correspondingly operating the shutter and diaphragm,

a separate electronic control device for selectively operatively controlling the corresponding exposure parameters of the camera, and operatively electrically connectable to the electromagnetic means for controlling the operation of the shutter and diaphragm, and

a mechanical conversion adapter having a mechanical transmitter portion operatively connectable to the rear housing section, an electrical conductor portion operatively connectable to the control device, an intermediate converter portion containing mechanically operated electrical switch means electrically connectable by the conductor portion to the control device for controlling the operation of the control device and electromagnetic means for correspondingly controlling the operation of the shutter and diaphragm, and a mechanical transmitter means operatively arranged in the transmitter portion for displacement between a rest position and an actuating position and including a cassette contact surface operatively arranged in the rest position adjacent the rear receiving portion for mechanical engagement displacement of the transmitter means by the cassette to the actuating position upon such insertion of the cassette and a switch contact surface arranged for actuating the switch means in the intermediate converter portion upon such transmitter means displacement to the actuating position, for converting corresponding mechanical displacement pulses of the transmitter means in response to such cassette insertion into electrical pulses of the switching means for controlling the control device for operating the electromagnetic means.

4,354,753

REFLEX CAMERA HAVING A FOCAL PLANE SHUTTER AND AN INTERCHANGEABLE VARIABLE SHUTTER OBJECTIVE

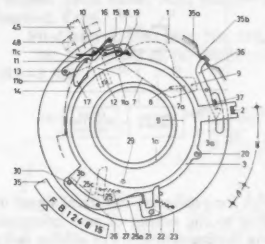
Lave Tenne, 434 Kungsbacka, Sweden; Franz Starp, Mittlere Steige 36, Wildbad, and Walter Holzapfel, Richard-Wagner-Strasse 42, both of Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,535

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 301640; Nov. 28, 1980, 3044882

Int. Cl.³ G03B *9/00*

U.S. Cl. 354—232 10 Claims



1. Reflex camera of the type having a focal plane shutter, comprising:

an objective containing a lens aperture and provided with a variable central shutter of the type adapted for operation between a basic open shutter position in which the lens aperture is fully open and a closed shutter position, and a central shutter drive for effecting opening and closing shutter operating movement, the central shutter being arranged for mounting a shutter segment system for operating movement adjustably backwards and forwards for opening and closing the lens aperture and which in the basic open shutter position fully clears the lens aperture,

a focal plane time adjuster associated with the focal plane shutter and arranged for setting to a particular central shutter position "C" for operating the central shutter,

a central shutter time adjuster associated with the central shutter and arranged for setting to a particular focal plane shutter position "F" which effects a "B" function for operating the focal plane shutter while the central shutter is in the basic open position,

a diaphragm and a diaphragm preselecting adjuster arranged such that, before commencement of the operating movement of the central shutter, the diaphragm approaches a specific working aperture which is preselectable by means of the diaphragm preselecting adjuster, and

a central shutter lock arranged such that upon setting the central shutter time adjuster to the focal plane shutter position "F" which effects a "B" function, the lock operates to block the central shutter drive from effecting closing shutter operating movement of the central shutter whereby to permit the focal plane shutter to be operated while the central shutter is in the basic position.

4,354,754

INDICATOR DEVICE WITHIN THE VIEWFINDER OF A CAMERA

Yosuke Takahashi, Sagamihara; Toshikatsu Kasui, Tokyo, and Nobuaki Sasagaki, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,622

Claims priority, application Japan, Jun. 9, 1980, 55-79226[U]; Jun. 12, 1980, 55-80970[U]

Int. Cl.³ G03B *17/00, 13/02*

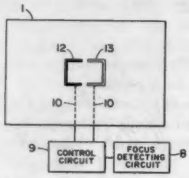
U.S. Cl. 354—289 4 Claims

1. An indicator device within the viewfinder of a camera for

indicating a predetermined range substantially centrally of the viewfinder field frame, said device comprising:

electro-optical display means disposed in the viewfinder optical path to display said predetermined range, the display means including at least a first and a second electro-optical element each having an electro-optical effect, and the concentration of each electro-optical element being changed by electrical signal information;

an information circuit for producing at least three kinds of outputs corresponding to photographing information; and



a control circuit for producing electrical signal information corresponding to the output of said information circuit and changing the concentration of at least one of the first and second electro-optical elements to display three different states;

whereby said display means indicates by the predetermined range at least three states corresponding to the photographing information.

4,354,755

APPARATUS FOR THE PROCESSING OF PHOTOGRAPHIC MATERIAL IN SHEET FORM

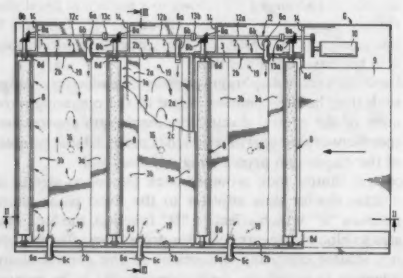
Joseph Becheiraz, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 13, 1981, Ser. No. 253,958

Claims priority, application Switzerland, Apr. 21, 1980, 3061/80; Feb. 25, 1981, 1251/81

Int. Cl.³ G03D *3/08*

U.S. Cl. 354—322 **13 Claims**



1. An apparatus for the processing of photographic material in sheet form, comprising at least two stations, an apparatus frame in which said stations are installed in sequence, each of said stations comprising a flat base tank having a sidewall, an upper rim and a bottom wall; a processing tray having a sidewall, a bottom zone and an upper rim comprising front and rear longitudinal rim portions opposite each other and lateral rim portions therebetween, and being set in said base tank so as to constitute a tray-and-tank unit; guiding elements for conveying the photographic material through the processing apparatus, comprising a cover which is supported on said lateral rim portions of said processing tray while leaving a slot free between the cover and the front and rear rim portions, respectively, said cover thereby guiding the introduction and withdrawal of the photographic material through said two slots; each station comprising a pair of transporting and squeezing rollers constituting a roller pair-building block adapted for being detachably and thereby exchangeably mounted in the tank-and-tray unit of the station; each roller of said roller pair comprising a shaft, and one of the two shafts having an extension part laterally protruding beyond said tank; a composite drive shaft supported in said apparatus frame and composed of drive shaft sections, one per station, and adapted for being detachably connected with each other, for rotation in common, upon the stations being installed to form said sequence thereof in said apparatus frame, a plurality of drive gear means, one per section being mounted on the drive shaft section of the respective station; and a plurality of driven gear means, one for each station, being mounted each on said extension part of one of the roller shafts in the respective building block in such a manner as to be drivingly engaged by said drive gear means of the same station, as the respective building block is inserted into the tank-and-tray unit of that station; and circulating means for circulating treating fluids through said stations.

4,354,756

COPYING APPARATUS

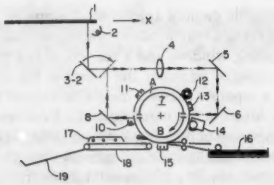
Yasunori Arai, Hatoyama; Ryota Ogawa, Kawagoe, and Michiro Ohishi, Hatoyama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1981, Ser. No. 253,637

Claims priority, application Japan, Apr. 23, 1980, 55/53726

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **9 Claims**



1. A copying apparatus comprising: a single rotatable drum having first and second photosensitive surfaces provided thereon; and means for forming an image of an original on said first photosensitive surface and for forming an image of the image formed on said first photosensitive surface on said second photosensitive surface.

4,354,757

XEROGRAPHIC OR ELECTROSTATIC COPYING APPARATUS CAPABLE OF COPYING ONLY SELECTED LINES, PARAGRAPHS OR OTHER SUCH SECTIONS OF AN ORIGINAL

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Fed. Rep. of Germany

Filed Nov. 1, 1976, Ser. No. 737,564

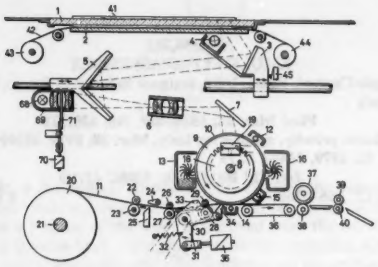
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548836

Int. Cl.³ G03G *15/04, 15/052*

U.S. Cl. 355—7 **1 Claim**

1. A xerographic or electrostatic copying apparatus capable of effecting the copying of only selected lines, paragraphs or other such sections of an original to be copied, the copying apparatus comprising, in combination, means provided with a light-sensitive surface; means for illuminating the original to be copied and producing upon the light-sensitive surface an electrostatic image of the original; selector means operable in a plurality of different settings for selecting for copying different respective lines, paragraphs or other such sections of the original; and means, in addition to the means illuminating the origi-

nal and producing the electrostatic image, automatically operative for electrostatically blanking out that portion of the light-sensitive surface corresponding to the non-selected sections of the original, the means for illuminating the original and producing the electrostatic image comprising means for projecting light from the illuminated original onto successive portions of the light-sensitive surface along a predetermined light path, the means for effecting the electrostatic blanking out comprising means for introducing additional light into the predetermined light path during those time intervals during which the means for projecting light from the illuminated



original onto the light-sensitive surface is projecting light onto the sections of the light-sensitive surface corresponding to the non-selected sections of the original, the means for projecting light from the illuminated original onto successive portions of the light-sensitive surface along the predetermined light path including a semi-transmissive mirror positioned to reflect light from the illuminated original towards the light-sensitive surface along the predetermined path, the means for introducing additional light into the predetermined path comprising a light source located behind the semi-transmissive mirror and operative for emitting light through the semi-transmissive mirror and into the predetermined light path.

4,354,758

EXPOSURE CONTROL DEVICE FOR A PHOTOCOPIER

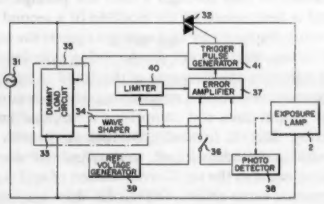
Kenji Futaki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 21, 1981, Ser. No. 226,806

Claims priority, application Japan, Jan. 31, 1980, 55-10234; Jan. 31, 1980, 55-10235

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 E **7 Claims**



1. An exposure control device for a photocopier which exposes an image by irradiating a manuscript with an exposure lamp and guiding the reflected light to a photosensor comprising,

(a) voltage generating means for generating a voltage corresponding to a voltage applied to said exposure lamp;

(b) light detecting means for detecting the light reflected from said manuscript for converting it into a voltage signal;

(c) means for adding an output voltage of said light detecting means to an output voltage of said voltage generating means;

(d) comparing means for comparing a voltage added by said adding means with a reference voltage set in advance, and for outputting a signal corresponding to the compared result; and

(e) control means for controlling the amount of light from said exposure lamp according to the output signal from said comparing means.

4,354,759

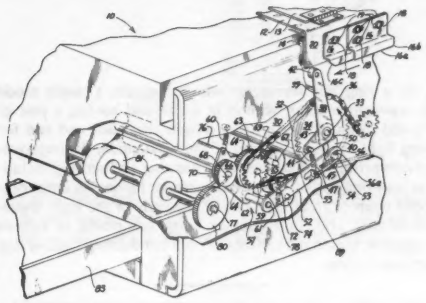
COPY PAPER FEED MECHANISM

David P. Bujese, Toms River, N.J., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 1, 1981, Ser. No. 259,397

Int. Cl.³ G03G *15/00*; P65H *5/04*

U.S. Cl. 355—3 SH **7 Claims**



1. In a photocopy machine having a reciprocating carriage for moving a document past an illuminating means, a rotatable drum having a photoconductive surface thereon, means for projecting an image of the indicia on the document to the photoconductive surface, and means for developing the image on the drum and for transferring the image to a sheet of copy paper, apparatus for feeding a sheet of copy paper to the photoconductive surface in proper registration with the image thereon, said apparatus comprising:

A. sheet separating means for separating and advancing a sheet of copy paper from a supply thereof,

B. sheet feeding means disposed in the feed path of the sheet being advanced of a predetermined distance from said sheet separating means and operable to define a registration gate for the sheet when said roller means is stationary and to feed the sheet to the photoconductive surface when said roller means is caused to rotate,

C. drive means movable from a first position in which said drive means normally is engaged with said sheet feeding means for normally driving said sheet feeding means, to a second position in which said drive means is disengaged from said sheet feeding means and is engaged with said sheet separating means, and

D. actuating means responsive to a first predetermined amount of movement of the carriage for moving said drive means from said first position to said second position to drive said sheet separating means in order to separate a sheet of copy paper from said supply and to advance the sheet of copy paper to said registration gate defined by said sheet feeding means for registration thereat, said actuating means being responsive to a second predetermined amount of movement of the carriage for moving said drive means from said second position back to said first position to discontinue driving said separating means and to drive said sheet feeding means, thereby causing said sheet feeding means to feed the registered copy sheet to the photoconductive surface of the drum in proper registration with the developed image thereon.

4,354,760
RING INTERFEROMETER COMPRISING A SINGLE-MODE LIGHT WAVEGUIDE

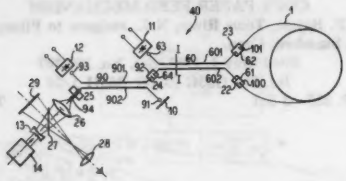
Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,142

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911129

Int. Cl.³ G01P *3/36*; G01B *9/02*

U.S. Cl. 356—350 **6 Claims**



1. In a ring interferometer which includes a single mode light waveguide being wound in a coil and having a pair of ends, and means for projecting a light into each end and for sensing light leaving each end of the waveguide, the improvement comprising said means for projecting and sensing including at least one optical directional coupler having an input-output end coupled to at least one of the ends of the light waveguide of said coil, said coupler being composed of optical waveguides, which are capable of only conducting light of one polarization state.

4,354,761
METHOD AND APPARATUS FOR AUTOMATIC EVALUATION OF INDENTATIONS IN HARDNESS TESTING OF MATERIALS

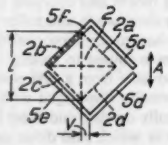
Hans-Dieter Jacoby, Werdorf, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,423

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2917971

Int. Cl.³ G01B *11/02, 11/22*

U.S. Cl. 356—378 **11 Claims**



1. A method for automatically evaluating an indentation produced in a material according to the Vickers hardness testing method, comprising the steps of:

(a) producing an image of the indentation;

(b) scanning edges of the indentation by guiding a diaphragm, having two slits, each of which is apertured in two coordinate directions, over the image of the indentation in a direction parallel to a diagonal of the indentation;

(c) producing electrical signals representing the luminous flux passing through the diaphragm, the electrical signals varying in proportion to surface brightness of the material;

(d) determining from the electrical signals values representing the relative position of edges of the indentation as well as the magnitude of the scanning movement of the diaphragm from edge to edge; and

(e) calculating from said values the length of said diagonal of the indentation, the length of said diagonal being dependent upon the hardness of the material.

4,354,762
EMULSIFYING ASSEMBLY

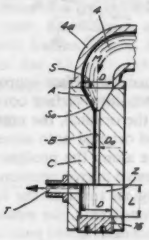
Angelo Cantoni, Rome, Italy, assignor to Solar 77 S.p.A., Rome, Italy

Filed Mar. 28, 1980, Ser. No. 135,081

Claims priority, application Italy, Mar. 30, 1979, 48549 A/79; Jul. 18, 1979, 24448 A/79

Int. Cl.³ B01F *5/06*; G05D *11/00*

U.S. Cl. 366—160 **9 Claims**



1. In an emulsifying assembly comprising a metering-mixing device effective to hold constant the ratio of two liquids, as the flow-rate thereof varies, said metering-mixing device including two supply ducts and an output duct, the first supply duct being for a dispersible or liquid supplied at a greater pressure thereto, said first supply duct being effective to be shut by a first shutter able of adjusting the flow rate depending on the opening thereof in said first supply duct, said second supply duct being for a continuous-phase liquid, said continuous-phase liquid being supplied at a pressure less than the pressure of said dispersible liquid and mixed therewith, the liquid mixture being then caused to pass through a duct the passage cross-section whereof is determined by the position of a second shutter, the latter being displaced by said mixture against the biassing of an elastic means, said second shutter being coupled to said first shutter adjusting the flow-rate of the liquid to be dispersed, the improvement wherein an emulsifying device is coupled to said mixture output duct, and comprising a base body wherewithin a tapering duct is formed communicating with a constant cross-section cylindrical duct, said cylindrical duct cross-section being equal to the small cross-section of said tapering duct, said constant cross-section cylindrical duct leading to a cylindrical cross-section plenum chamber of larger diameter than said cylindrical duct, the large section of said tapering duct forming the means for supplying the fluid mixture to be emulsified, and a discharge duct, for discharging the obtained emulsion, being provided on the cylindrical surface of said plenum chamber, said plenum chamber having a closed end spaced from the end at which said cylindrical duct opens into said plenum chamber, said closed end being formed by a wall opposite said cylindrical duct, said discharge duct communicating with said plenum chamber at the end thereof at which said cylindrical duct opens into the plenum chamber.

4,354,763
DRY-TYPE DEVELOPING DEVICE

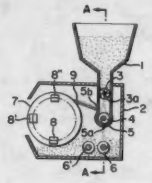
Junichi Koiso; Akihiko Tamura, and Isao Ikemoto, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Nov. 24, 1980, Ser. No. 210,138

Claims priority, application Japan, Nov. 26, 1979, 54-162686[U]

Int. Cl.³ G03G *15/09*

U.S. Cl. 366—181 **3 Claims**



1. In a developing device for an electrostatic recording machine utilizing a developer of toner and carrier and wherein at least a portion of the toner is removed from the developer during development, the developing device including a magnetic brush sleeve for carrying developer on its surface and being partially immersed in a reservoir of developer, an apparatus for replenishing the developer by restoring toner thereto to enable its subsequent reuse for development and comprising:

a toner hopper for containing a supply of fresh toner and including a vertically extending duct into which fresh toner is dispensed and an opening defined in said duct;

elongated mixing and conveying means disposed in said duct at its lowermost portion and below said opening therein so that fresh toner dispensed from said hopper drops onto said mixing and conveying means, and operative to distribute along its entire length the fresh toner dropping thereon;

scraping means for removing used developer from the sleeve and for directing the used developer into said duct through said opening therein and directly onto said mixing and conveying means along its entire length for mixture thereby with the fresh toner to replenish the developer for subsequent reuse; and

said duct further including a plurality of openings at its lowermost portion below and along the length of said mixing and conveying means and through which replenished developer from said mixing and conveying means is returned to the reservoir after mixing by said mixing and conveying means for use in subsequent development.

4,354,764
SPECIMEN TESTING APPARATUS

Heinz Achermann, Sonnhaldenstrasse 2, CH-8610 Uster, and Jürg Daetwyler, Bodenacherstrasse 105, CH-8121 Benglen, both of Switzerland

Filed Dec. 29, 1980, Ser. No. 221,023

Claims priority, application Switzerland, Jun. 13, 1980, 4568/80

Int. Cl.³ G01N *25/16*

U.S. Cl. 374—56 **7 Claims**

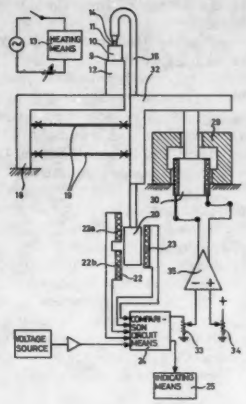
1. Specimen testing apparatus comprising

(a) specimen support means **(12)** for supporting a specimen **(10)**;

(b) specimen sensing means **(16)**;

(c) guide means **(19)** connecting said sensing means for displacement relative to said support means, said guide means comprising a parallelogram arrangement including a pair of parallel resilient guide links **(19)** normally biasing said sensing means toward an initial position in engagement with a specimen on said support, whereby variation of a given physical characteristic of the specimen produces a corresponding displacement of said sensing means relative to said support means;

(c) means **(22, 23, 24)** for generating an electrical signal as a function of the displacement of said sensing means from said initial position; and



(d) electromagnetic compensation means **(29, 30)** for applying to said specimen sensing means a force tending to displace the sensing means relative to said support means.

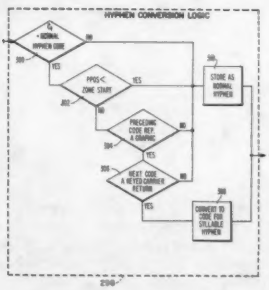
4,354,765
HYPHEN CHARACTERIZATION APPARATUS FOR A TYPEWRITER

James C. Buchanan, and Edward V. Rutkowski, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,415

Int. Cl.³ B41J *5/30*

U.S. Cl. 400—7 **2 Claims**



1. In a typewriter of the kind having a keyboard apparatus that sequentially produces coded signals representing printing operations, said signals including a coded normal hyphen signal representative of a hyphen printing operation, plural coded signals representing graphic printing operations and a coded carrier return signal, said typewriter further including a printing apparatus that responds to coded signals to position a print point and to print indicia along a line, means for maintaining a stored record of the present printing position along a line, means for establishing a beginning location for a return zone along said line, and storage means for storing said coded signals originating from said keyboard apparatus, a hyphen characterization system comprising:

means for detecting said coded normal hyphen signal in a sequence of coded signals produced at said keyboard apparatus;

means, cooperating with said detecting means, for examining the coded signals adjacent to said coded normal hyphen signal when detected in said sequence of coded signals to determine the nature of the printing operations represented thereby;

means for comparing the present print location and the beginning location for the return zone;

means for selectively converting said coded normal hyphen signal, prior to receipt by said storage means, to a distinctive coded signal for a syllable hyphen based in part on the nature of said adjacent coded signals as determined by said examining means and in part based on the results of the comparison by said comparison means;

means for defining line endings during playback from storage, said defining means recognizing as potential line ending codes, said coded normal hyphen signal and said coded syllable hyphen signal; and

means, operative on playback from said storage means, for nullifying a coded syllable hyphen signal that does not occur upon playback at a position in said sequence of coded signals that corresponds to the end of a line, whereby syllable hyphens that may be omitted and hyphens that are always printed may be represented at said keyboard apparatus by a common code.

4,354,766

END-OF-PAPER SENSING DEVICE

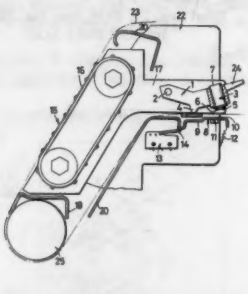
Wolfgang Hendrischk, Neu-Ulm, and Alexander Voigt, Gerstetten, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,624

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2943241

Int. Cl.³ B41J *29/42*

U.S. Cl. 400—708 **5 Claims**



1. End-of-paper sensing device for a printer, there being a feed path for paper to be printed upon, comprising:

a pivot lever, having a pivot adjacent to the feed path and being capable of assuming a position for extending in upstream direction on the feed path;

a sensing cam on the lever disposed thereon to rest on the paper when in the feed path, but projecting into the path in the absence of such paper;

a permanent magnet mounted on the pivot lever;

a switch bar constructed as a two-arm rocking lever and being disposed adjacent to the feed path so that one arm faces said lever across the feed path, the paper when in the feed path is disposed between the switch bar and the lever, the bar being made of a material permitting attraction by the magnet, said bar further disposed so that said one arm is being attracted by and toward the magnet when the lever has pivoted the cam into the feed path and the magnet toward the bar and there is no paper between the magnet and the switch bar; and

switch means disposed for being actuated by a second arm of said switch bar as the one arm is attracted toward the magnet.

4,354,767

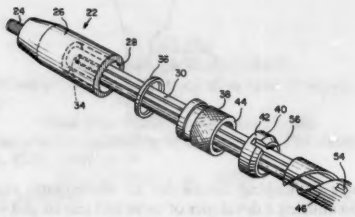
MECHANICAL PENCIL

Aram J. Tessier, Warwick, R.I., assignor to T & T Mfg. Co., Providence, R.I.

Filed Jun. 20, 1980, Ser. No. 161,266

Int. Cl.³ B43K *21/10*

U.S. Cl. 401—63 **3 Claims**



1. In a mechanical pencil having the following conventional elements:

(a) a lower exterior barrel having an axial bore;

(b) a lower cylindrical portion sized and shaped to fit within and to be fixed against rotation relative to the lower exterior barrel, said cylindrical portion also having an axial bore;

(c) a hollow guide tube having a longitudinal slot along one side, said guide tube being fixed to and extending upwardly from the upper end of the cylindrical portion, said guide tube also having an axial bore;

(d) support means mounted near the lower end of the guide tube above the upper end of the cylindrical portion;

(e) a radially extending stop means mounted on the upper end of the guide tube;

(f) a worm spring rotatably mounted on the guide tube between the support means and the stop means, said worm spring being axially compressed;

(g) a tubular lead carrier sized and shaped to fit within and to slide along the guide tube, said lead carrier having a lower apertured end for resiliently gripping the end of a length of pencil lead, said lead carrier having a radially protruding ear near its longitudinal midpoint, said lead carrier having a longitudinal slot formed between its protruding ear and its upper end where the slot is closed;

(h) a lead expeller rod sliding within the tubular lead carrier, said rod having a radially protruding ear near its upper end, said rod ear protruding through the lead carrier slot parallel to the lead carrier ear, said rod ear being slidable along the slot towards and away from the lead carrier ear;

(i) the lead carrier ear and the lead expeller rod ear being maintained longitudinally spaced-apart by the interposition of one turn of the helical worm spring, the lead carrier moving along the guide tube in response to rotation of the worm spring about the guide tube; and

(j) an upper exterior cap sized and shaped to fit over the worm spring, said exterior cap rotatably linked to the worm spring whereby rotation of said exterior cap causes rotation of the worm spring which causes reciprocation of the lead carrier along the full length of the guide tube slot;

the improvement therein comprising: clutch means for yieldably fixing the lower portion of the worm spring to the upper portion of the support means, said clutch means engaging under conditions of worm spring torque load below a selected load level causing the worm spring to rotate with the rotating support means, said clutch means disengaging when the worm spring encounters torque forces in excess of the selected load level causing the

worm spring to slip relative to the rotating support means and to remain stationary relative to the guide tube preventing damage to the mechanism, said improved clutch means further comprising:

(i) the support means being a cap bushing coaxially and rotatably mounted on the guide tube;

(ii) the upper exterior cap gripping the cap bushing and being fixed against rotation relative thereto whereby rotation of the exterior cap causes rotation of the cap bushing;

(iii) the clutch means further including a clutch bushing coaxially and rotatably mounted on the guide tube above the upper end of the cap bushing, said clutch bushing being fixed against rotation and being fixed against upward movement relative to the lower end of the worm spring; and

(iv) the cap bushing having an upper rim extending perpendicular to the axis of the cap bushing, the clutch bushing having a lower rim extending perpendicular to the axis of the clutch bushing, the cap bushing upper rim and the clutch bushing lower rim facing each other and being axially pressed together into frictional contact by the axially exerted spring force of the compressed worm spring.

4,354,768

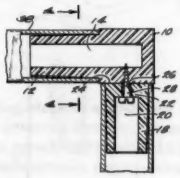
TUBING CONNECTOR

Joseph I. Witek, Downers Grove, Ill., assignor to Medalist Industries, Inc., Mequon, Wis.

Filed May 1, 1981, Ser. No. 259,734

Int. Cl.³ F16B *2/16*

U.S. Cl. 403—3 **3 Claims**



1. A tubing connector comprising a base block formed from a molded plastic material which can threadably receive a self tapping screw and having six finished connecting faces with the faces oriented to form a cube, a first joining member having a root integrally formed with said base block and extending from one of said faces and the longitudinal axis of said first joining member extending perpendicular to the face of said base block from which it extends, said first joining member having a central bore, a second joining member having a bore, a web at one end of said second joining member and forming the bottom of said bore and a planar end face, and self tapping fastening means extending through said web and received in said base block to secure said end face of the second joining member in abutment with a face on said base block to provide a rigid assembly of said second joining member with said base block, and wherein said joining members have exterior surfaces sized to receive and interconnect tubular members to form structures and the first joining member central bore extends uniformly into said base block and being of a diameter such that said self tapping fastening means from said second joining member penetrates into said central bore yet has sufficient purchase with the block material to retain said second joining new member.

4,354,769

DUAL COUNTERACTING HUB-TO-SHAFT CLAMP CONNECTION

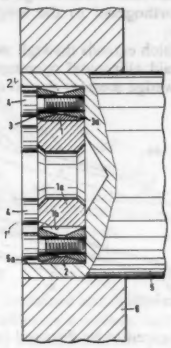
Oskar E. Peter, Scloss-Strasse 9/1, D-7129 Brackenheim, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,156

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013874

Int. Cl.³ F16D *1/06*

U.S. Cl. 403—248 **6 Claims**



2. Dual counteracting hub-to-shaft clamping connection having

an axially split (1') inner ring (1) formed with outer conical surfaces having the apex from the cone surfaces intermediate the length thereof;

an axially split (2') outer ring (2) formed with inner conical surfaces having the apex from the cone surfaces intermediate the axial length thereof;

a pair of clamping or compression rings (3, 3*a*) having double conical surfaces fitting between the inner conical surfaces of the outer ring (2) and the outer conical surfaces of the inner ring (1);

and circumferentially uniformly positioned clamping bolts passing axially through said axially outer one (3) of the clamping rings and into the axially inner one (3*a*) of said clamping rings to tighten the rings over said conical surfaces against each other and thus provide for diametrically directed forces being applied to said rings,

and comprising, in accordance with the invention,

a circumferentially continuous cylindrical metal ring (1*a*) formed with a circumferential continuous groove (1*b*) in the outer circumferential surface thereof fitted within the axially split inner ring (1), said axially split inner ring (1) being seated in said groove (1*b*).

4,354,770

WEDGE ASSEMBLY

Sheldon A. Block, Cupertino, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1980, Ser. No. 151,072

Int. Cl.³ F16B *2/14*

U.S. Cl. 403—409 **4 Claims**

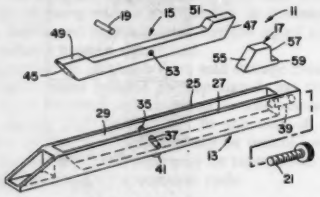
1. Apparatus for securing a circuit board in a rectangular channel comprising:

(a) a housing suitable for mounting on the surface of said circuit board and having an open cavity, said cavity being defined by a flat bottom surface, parallel sidewalls which are orthogonal to said flat bottom surface, a first end surface between said sidewalls extending upward in a forward ramp from said bottom surface, and a second end surface between said sidewalls and substantially normal to said bottom surface, said sidewalls having aligned, ellipsoidal openings

extending therethrough having the same slope as said first end surface;

(b) a single wedge member configured to be disposed in said open cavity, a first end of said wedge member having a ramped surface having a slope complementary to the slope of said first end surface of said cavity and a second end of said wedge member having a ramped surface having a slope of the same inclination but opposite in direction to the slope of the first end of said wedge member, the bottom surface of said wedge member being flat and the top surface having at least two contact lands, said wedge member having a hole therethrough orthogonal to the longitudinal axis of said wedge member;

(c) a guide pin which extends through said hole in said wedge member into said ellipsoidal openings of said housing for retaining said wedge member in said cavity;



(d) an anvil configured to be disposed in said cavity between said wedge member and said second end surface of said cavity, said anvil having a ramped surface complementary to the ramped surface of the second end of said wedge member at a first end, a flat bottom surface, and a surface substantially normal to said bottom surface at a second end, said anvil disposed in said cavity so that its ramped surface faces said wedge member; and

(e) means for exerting force upon said second end of said anvil such that said anvil moves forward in said cavity against said wedge member, the wedge member being moved upward between the first end surface of said housing and the ramped surface of said anvil so that the contact lands of the wedge member press against one wall of the channel and the opposite surface of the housing presses against the circuit board to secure it against the other wall of the channel.

4,354,771

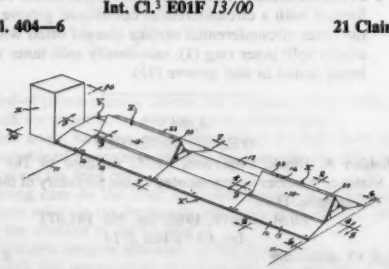
MOTORIZED CURB BARRIER TRAFFIC-WAY CONTROLLER

Harry D. Dickinson, 1681 Larco Way, Glendale, Calif. 91202

Filed Mar. 6, 1981, Ser. No. 241,025

Int. Cl.³ E01F *13/00*

U.S. Cl. 404—6 **21 Claims**



2. An above grade motorized curb barrier traffic-way controller, including;

a barrier module to be installed upon the surface of and transversely of the traffic-way, and comprised of a frame with oppositely ramped margins extending to spaced rail members defining an open channel for receiving a curb member projecting from a support shaft rotatable therein, the curb member being substantially coextensive with the barrier module and extending from the support shaft at the vehicle approach ramp toward the vehicle departure ramp thereof,

a locking lift means for alternately positioning the curb member in a traffic flow "go" position and a traffic blocking "stop" position, and comprised of an actuating shaft spaced from and parallel to the support shaft and disposed beneath the curb member and with a lift lever projecting from one side of the shaft to extend upwardly from and retractile into the frame opening, there being a toggle link connecting the lever and curb member and substantially aligned with the lever when the lift means is in the traffic blocking "stop" position to lock the same thereat,

and control means for reversibly operating a motor drive means coupled to and positioning the shaft and curb member in said "stop" and "go" positions.

4,354,772

ROAD POST OR REFLECTOR POST

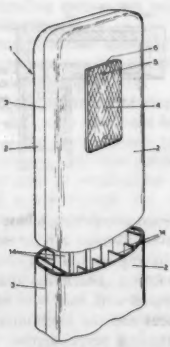
Joannes H. Drexler, Koppelweg 8-12, Doesburg, Netherlands

Filed May 22, 1980, Ser. No. 152,200

Claims priority, application Belgium, Sep. 19, 1979, 197213

Int. Cl.³ E01F *9/00*

U.S. Cl. 404—10 **7 Claims**



1. A post comprising an elongate hollow body formed of a pair of identical dish shaped members symmetrical with respect to a plane of symmetry passing through a central longitudinal axis, each of said members having an integrally formed bottom wall, a pair of upstanding longitudinal side walls and an end wall at at least one end, the edge of one of said side walls and said at least one end wall on one side of said plane of symmetry being formed with a blade like projection and the edge of the other side wall and the remaining edge of said at least one end wall being formed with a conforming groove receiving said projection each of said members being provided with a longitudinally extending web closely adjacent and parallel to each of said side walls, said webs extending upstanding from the bottom wall to a height such that the edges thereof are in contact.

4,354,773

GROUND COVERING ELEMENT HAVING RAISED PORTIONS AT THE USEFUL SIDE WHICH ARE SEPARATED FROM ONE ANOTHER BY DUMMY GAPS, A GROUND COVERING ELEMENT GROUP OF SUCH GROUND COVERING ELEMENTS, AND A METHOD OF PRODUCING SUCH GROUND COVERING ELEMENTS

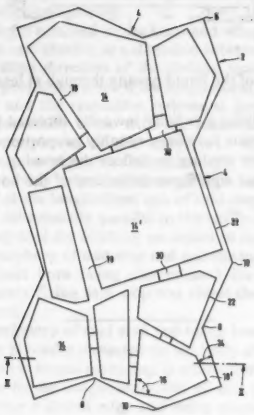
Fritz Noack, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Barth GmbH, Karlsruhe and F. von Langsdorff Bauverfahren GmbH, Rastatt, both of, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,511

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905796

Int. Cl.[3] E01C *5/00*

U.S. Cl. 404—41 11 Claims



1. A ground covering element adapted for positioning adjacent another ground covering element, comprising: a top surface, a bottom surface substantially parallel to said top surface and a lateral surface substantially perpendicular over its entire length to said top and bottom surfaces, the outer contour of the ground covering element forming projections and recesses about said entire periphery, said contour having corner projections which form the vertices of a rectangle and line portions all of which are oblique to the sides of said rectangle connecting said corner projections, at least two of the line portions connecting each of said vertices being of equal length and the remaining line portions having lengths which are integer multiples of the lengths of said at least two line portions of equal length; said element comprising a plurality of irregular spaced polygons projecting from said top surface to form raised portions, the majority of said polygons differing in shape from each of the other of said polygons; the edges of said raised portions being straight and separated from each other by dummy gaps having widths which vary linearly along the entire length thereof and from the periphery of said ground covering element by marginal dummy gaps, the edge of each raised portion adjacent the periphery of said element substantially following the contour thereof and having a distance therefrom such that the average distance between the edge of said raised portion adjacent said periphery and said contour is approximately one-half the average width of said dummy gaps between said raised portions, sand filling the space between said adjacent ground covering elements thereby effectively concealing said space from view.

4,354,774

METHOD AND APPARATUS FOR THE RESTRAINED AND FLAME-RETARDANT LAYING OF ELECTRIC CABLES

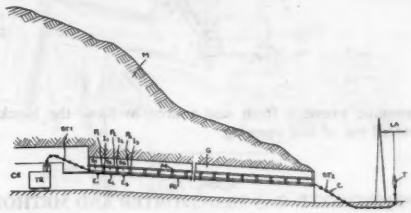
Giuseppe Bianchi, Milan, and Giovanni Gussoni, Settimo Milanese, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Jun. 20, 1980, Ser. No. 161,581

Claims priority, application Italy, Jun. 29, 1979, 23966 A/79

Int. Cl.[3] F16L *1/00*

U.S. Cl. 405—157 9 Claims



1. Apparatus for the restrained and flame-retardant laying of one or more electric cables on a surface, said apparatus comprising a duct formed by a plurality of elongated duct elements disposed in alignment with each other and having a cross-section such that they extend at least part way around said one or more cables, said elements being rigid and being made of a non-flammable material and each element being small in length in relation to the length of said duct and comprising a first part which is U-shaped in cross-section and a second portion in the form of a cap which covers the open side of said first part, said elements being spaced from each other at their ends by an amount which is small in relation to their lengths to permit longitudinal movement of the ends of the first part and second part of one element with respect to the first part and the second part of the next adjacent element and said elements being mounted with respect to said surface so as to resist movement in relation to said surface, a granular, non-flammable material in said duct and covering said one or more cables and a flexible, non-flammable sealing means extending between adjacent ends of the parts of said elements for sealing the spaces between said adjacent ends while permitting movement of the ends with respect to each other whereby said one or more cables in said duct are restrained within said duct and said elements can move with respect to each other if required.

4,354,775

PNEUMATIC LINE CLEAN OUT DEVICE

Leon C. Jalas, Rte. 1, Sutherland, Iowa 51058

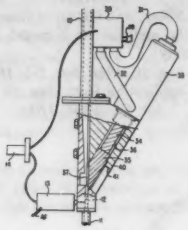
Continuation-in-part of Ser. No. 969,993, Dec. 15, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,517

Int. Cl.[3] B65G *53/66*

U.S. Cl. 406—3 8 Claims

1. In combination with a device for the pneumatic injection of seeds into the ground including an enclosed seed pathway comprising a chute for conveying seeds to a nozzle; and a pneumatic pressure source adapted to provide pressure to move said seeds through said pathway means for cleaning a blockage in said nozzle caused by blocking material becoming lodged in said pathway comprising closure means adapted to close a discharge opening formed in said enclosed pathway, said closure means being openable to allow ejection of the blocking material, sensing means communicating with said pathway to sense a blocking situation and operably connected

with said closure means to open said closure means upon the sensing of a blockage, said opening being located to allow



pneumatic pressure from said source to blow the blocking material out of said opening.

4,354,776

PRESSURIZED GAS TRANSPORTER AND METHOD

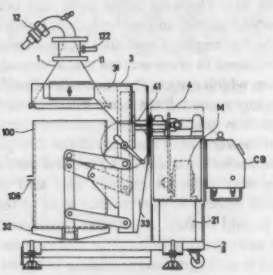
Osamu Matsui, Osaka, Japan, assignor to Matsui Manufacturing Co., Ltd., Osaka, Japan

Filed Aug. 12, 1980, Ser. No. 177,487

Claims priority, application Japan, Aug. 13, 1979, 54-103059; Jun. 5, 1980, 55-76362

Int. Cl.³ B65G *53/34*

U.S. Cl. 406—23 8 Claims



1. A pressurized gas transporter comprising:

(1) a transporting means having a conical part, including a discharging section, and a pipe arrangement connected to one end of said conical part; and

(2) a carrier cart having a frame; a connecting means mounted on said frame for uniting a container, wherein powdered materials for the like are stored, to said conical part forming an air-tight system; and a turning means on said frame for inverting said container together with said conical part; said connecting means having a locking means for fixing said conical part to said cart, elevator means for raising the container to be air-tightly sealed to the conical part and for supporting said container thereon, and a frame for connecting said locking means with said elevator means.

4,354,777

HIGH PRESSURE FEEDER DEFLECTION PREVENTION

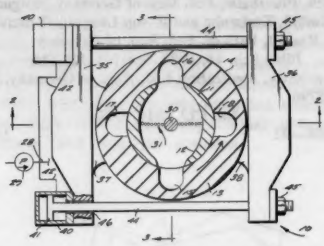
Johan C. F. C. Richter, Nice, France, and Jens Ramstad, Oslo, Norway, assignors to Kamyr, Inc., Glen Falls, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,032

Int. Cl.³ B65G *53/30, 53/46*

U.S. Cl. 406—63 22 Claims

1. A high-pressure transfer device including: a pocketed rotor containing a plurality of diametrically through-going pockets, said rotor rotatable about an axis; a housing enclosing said rotor for rotation with respect to said housing, said housing having an exterior periphery and having four ports disposed around the exterior periphery thereof for registry with inlets to and outlets from said through-going pockets; means for rotating said rotor in said housing with respect to said ports about said axis of rotation, and in a given direction; screen means for screening particulate material above a predeter-



mined size out of the liquid passing through at least one of said ports; and

means for applying a radially inwardly directed force to said housing exterior periphery roughly proportional and opposite to a force tending to deflect the housing radially outwardly so that significant deflection of the housing is prevented.

4,354,778

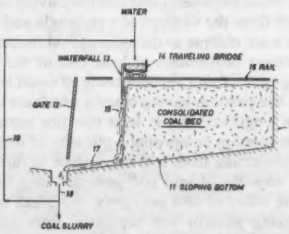
WATERFALL TECHNIQUE FOR REMOVING SETTLED COAL SOLIDS FROM A STORAGE FACILITY

Kenneth L. Bickham, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1978, Ser. No. 955,674

Int. Cl.³ B65C *53/02*

U.S. Cl. 406—137 20 Claims



1. A method for removing slurriable solids which have become settled and compacted during storage and/or transport comprising, allowing the solids to settle and compact in a container having a sloping bottom and a removable gate located adjacent the low end of the sloping bottom, removing the gate of the container and exposing the adjacent part of the compacted solids, subjecting the exposed solids to falling liquid to form a slurry which falls to the bottom of the container, and allowing the slurry to exit the container via the sloping bottom.

4,354,779

DRILLING TOOLS

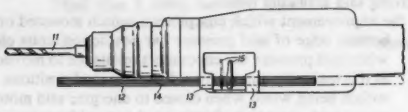
Christopher A. Vaughan, Morden, England, assignor to Kango Electric Hammers Limited, London, England

Filed Jun. 11, 1980, Ser. No. 158,384

Claims priority, application United Kingdom, Jun. 19, 1979, 7921313

Int. Cl.³ B23B *49/00, 45/14*

U.S. Cl. 408—241 S 12 Claims



1. A depth stop device for a drilling tool having a body, said depth stop device comprising:

a pair of flanges attached to the body and being spaced with respect to one another in a direction substantially parallel to the drilling direction of the drilling tool, said flanges inwardly projecting toward the longitudinal center axis of the body and the respective outermost portions thereof being substantially flush with the respective outermost adjacent peripheries of the body, each of said flanges respectively having a bore therethrough;

a stop rod slidably extending through each said bore in the direction of the longitudinal axis of said stop rod and in a direction substantially parallel to the drilling direction of the drilling tool for abutting an object to be drilled;

the outer periphery of said stop rod and the inner periphery of each said bore being dimensioned for substantially non-rotatably fixing said stop rod about the longitudinal axis thereof;

the outer periphery of said stop rod being knurled;

a rigid lever pivotally mounted on the body about a pivotal axis eccentric to and extending in a direction substantially transverse to the longitudinal axis of said stop rod, said lever having a detent edge and being pivotally movable within the space between said flanges and in a first direction and to a first position for engaging said detent edge with said stop rod knurled outer periphery for restricting movement of said stop rod in the direction of the longitudinal axis thereof and for, when said stop rod abuts an object to be drilled, further pivotally moving said lever in said first direction and urging said detent edge into further engagement with said stop rod knurled outer periphery for further restricting movement of said stop rod in the direction of the longitudinal axis thereof;

a spring means operatively associated with said lever for biasing said lever in said first position; and

said lever being manually pivotally movable in a second direction opposite said first direction and to a second position for disengaging said detent edge from said stop rod.

4,354,780

MAKING FORMED MILLED CUTTERS AND KEY CUTTERS

Evangelos Bougiouris, Auburn, Mass., assignor to Ilco Unican Corp., Rocky Mount, N.C.

Filed May 23, 1980, Ser. No. 152,614

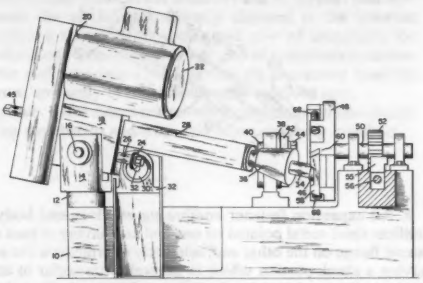
Int. Cl.³ B23C *3/28*

U.S. Cl. 409—122 7 Claims

1. A milling machine for cutting teeth in the peripheral area of a circular blank, comprising:

an arm, a universal joint mounting said arm at one end thereof, a rotary cutter mounted on said arm adjacent to the universal joint, a motor to rotate said cutter, a template adjacent to the opposite end of the arm,

means at said opposite end of the arm to move the arm and its cutter in a pattern controlled by the template, comprising a cam follower on said arm in the area of the template, a rotationally mounted member and means to oscillate the same, a generally diametrical guide on the rotationally mounted member, a block in the guide, a connection from the arm to the block, and resilient means on the rotationally mounted member constantly biasing the block in a direction to cause the arm to engage the cam follower



with the template, whereby oscillatory motion of the rotationally mounted member causes the cutter to be bodily moved in a certain direction, then translated, and thereafter moved in the opposite direction and returned in operative cutting relation to the circular blank,

and means to index the blank between the formation of each complete cut.

4,354,781

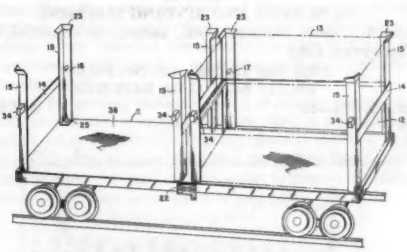
DOUBLE DECK SECURING MEANS FOR RAILROAD CAR

Hugh Roberts, 814 Marlowe Rd., Cherry Hill, N.J. 08003

Filed Feb. 5, 1980, Ser. No. 118,729

Int. Cl.³ B61D *45/00*

U.S. Cl. 410—77 13 Claims

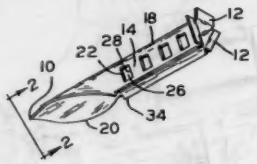


1. In a railroad flatcar, means for securing shipping containers in a doubledeck configuration, said shipping containers having corner castings with side holes and bottom holes, the improvement comprising a frame assembly, said frame assembly having four L-shaped vertical members, at least two of said vertical members having retractable and extendable substantially cylindrical securing members, said securing members positioned on said vertical members so as to be aligned with the side holes of the corner castings of the upper shipping container and adapted to extend into the side holes of said upper shipping container corner casting prior to and during movement of said flatcar so as to secure the upper shipping container during movement of said flatcar, and to retract for unloading and reloading shipping containers on said flatcar so as to permit quick and efficient unloading and loading.

4,354,782
DRIVE-IN EXPANSION FASTENER

Duane B. Newport, 3131 Simon St., Arcola, Ind. 46895

Filed Aug. 18, 1980, Ser. No. 178,741
Int. Cl.³ F16B *13/06, 15/06*
U.S. Cl. 411—61 10 Claims

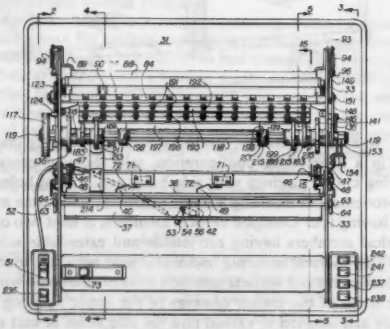


1. An expansion fastener comprising an elongated body of resilient sheet metal pointed on one end and having at least one lateral flange on the other end, said body intermediate the ends having a shank portion which is generally triangular in cross section, said shank portion having two longitudinally extending generally planar spaced juxtaposed sides integrally joined by a longitudinally extending bridging portion, said sides having longitudinal edges opposite from said bridging portion which are adjacent and spreadable, at least one tooth on one of said sides extending outwardly therefrom and formed of said sheet metal, said one side having a thread-engaging edge opposite said teeth which extends transversely of said shank portion, the pointed end portion of said body being defined by two other edges which converge at said pointed end and at the other ends join said longitudinal edges, respectively, said other two edges extending obliquely with respect to the axis of said body, the projection of said two other edges onto a plane which is substantially normal to the axis of said body being substantially circular, said tooth lying radially within an imaginary cylindrical extension of said pointed end portion, whereby driving said body into wallboard forms a hole therein conforming to the shape of said pointed end portion which clears said tooth.

4,354,783
PUNCHING AND BINDING MACHINE

Elmer G. Szanto, Saratoga, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.

Filed May 15, 1980, Ser. No. 150,049
Int. Cl.³ B42C *13/04;* B42B *5/00*
U.S. Cl. 412—13 26 Claims



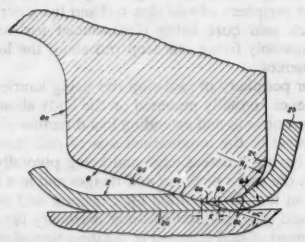
1. In apparatus for binding apertured sheets together using a first strip, a plurality of thermoplastic studs projecting from and spaced longitudinally along said first strip and a second strip formed with holes spaced longitudinally of a second strip at intervals complementary to said studs, said apparatus having a frame provided with a pair of spaced sides, means formed to receive a second strip and a platen to support sheets with their apertures aligned with said holes with a first strip above said sheets with said studs extending through said apertures and said holes and protruding below said second strip, a pressure bar, cooperating means on said sides and bar for guiding movement of said bar from a first position above said platen to a second position adjacent said platen on top of said first strip, actuating means for moving said pressure bar, and a motor driving said actuating means,

the improvement which comprises a switch mounted on the bottom edge of said pressure bar positioned to be closed when said pressure bar encounters resistance to movement as it is manually moved from first to second positions, said switch being wired when closed to energize said motor to cause said actuating means to drive said pressure bar further toward second position to exert downward pressure.

4,354,784
METHOD AND APPARATUS FOR FORMING A NON-SILVER SCORED METAL END

Teddy M. Westphal, Glencoe, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 70,170, Aug. 27, 1979, Pat. No. 4,254,890.
This application Oct. 24, 1980, Ser. No. 200,595
Int. Cl.³ B21D *51/44*
U.S. Cl. 413—12 3 Claims



1. The method of forming a continuous annular scoreline (6) in the upper surface of a horizontally supported end closure member (2) having a central panel portion (2*a*), a chuck wall portion (2*b*), and a radius portion (2*c*) connecting said central panel and chuck wall portions, which comprises the steps of

(a) arranging opposite the closure member a scoring die (8) having a single downwardly depending annular projection (8*a*) for forming an annular scoreline (6) between the radius and central panel portions of the end, thereby to define a removable portion within the closure member central panel portion, said projection including in cross-sectional profile

(1) a central horizontal flat surface portion (8*b*) for forming the bottom wall of the scoreline

(2) a convex outer wall surface portion (8*c*) diverging outwardly from one end of said bottom wall for forming the outer side wall of the scoreline, said central flat surface portion being tangent to the surface of said outer wall portion; and

(3) a flat inner wall surface portion (8*d*) diverging outwardly from the other end of said bottom wall for forming the inner side wall of the scoreline, said inner wall surface portion being angularly arranged at an obtuse angle relative to said central flat surface portion; and

(b) pressing said scoring die vertically into the upper surface of the closure member while horizontally supporting the lower surface of said closure member opposite said score

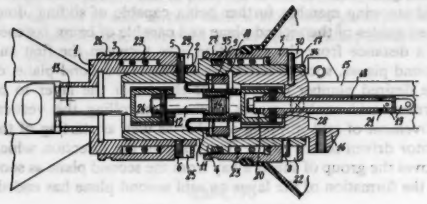
die annular projection to form the scoreline between the central panel and radius portions of the member, whereby when the metal end is opened mechanically by a can opener, the formation of metal slivers is minimized.

4,354,785

GAS-TIGHT CONNECTOR

Andre Garnier, Ferme de Bel-Air, Lueil-Sous-Faye, F-86200 Loudun, France

Filed May 1, 1980, Ser. No. 145,815
Int. Cl.³ B25J *1/00*
U.S. Cl. 414—8 **9 Claims**



1. A connector for a remote manipulator of the master-slave type intended primarily for remote handling of radioactive or hazardous products, comprising a first element designated as a "tong-unit connector" and comprising the tong unit proper, a second element designated as a "gas-tight connector" and a third element designated as a "remote-manipulator connector", the gas-tight connector being engaged coaxially within the tong-unit connector and the remote-manipulator connector being engaged coaxially within the gas-tight connector, the three elements aforesaid being traversed from one end to the other by shafts which are capable of translational motion in order to initiate opening and closing of the tong unit, wherein the gas-tight connector is provided with a sealing diaphragm which is capable of unfolding throughout the range of translational motion of a shaft of the gas-tight connector while accompanying the displacement of said shaft and ensuring that perfect gas-tightness is maintained between said gas-tight connector and the remote-manipulator connector during all the forward and return movements of the shaft, said connector including a system for locking the gas-tight connector onto the tong-unit connector, said system being so arranged as to permit said locking action by applying the gas-tight connector axially against the tong-unit connector, followed by rotational displacement of said gas-tight connector about its axis, radial pins forming part of said gas-tight connector being then adapted to engage within bayonet sockets of said tong-unit connector and being locked automatically within said sockets by means of a component forming part of the second tong-unit connector.

4,354,786

APPARATUS FOR STACKING CONTAINERS ON A PALLET

Blaine W. Spitler, 2622 Dayton, Visalia, Calif. 93277

Filed Mar. 24, 1980, Ser. No. 132,883
Int. Cl.³ B65G *57/30*
U.S. Cl. 414—46 **9 Claims**

1. In an apparatus for stacking containers on a pallet in a pack having a stack of the containers:

A. means for conveying a pallet to and from a loading station with the pallet in a substantially horizontal attitude and at a predetermined elevation at the loading station;

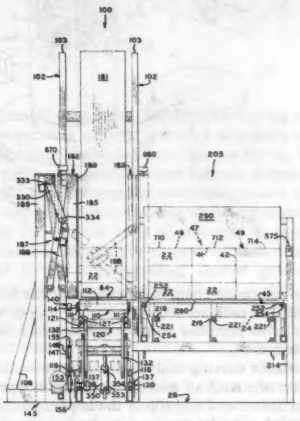
B. a plate;

C. means mounting the plate for movement between a substantially horizontal attitude in superimposed relation to said predetermined elevation at the loading station and a position retracted therefrom;

D. a conveyor having a section adjacent to the loading station for reciprocation between a lowered position to receive the containers and an elevated position;

E. a pair of clamping members disposed oppositely of and extended upwardly from the conveyor section when the section is in the elevated position, one of the members being movable from the other member and toward the other member to clamp a row of containers received on the section between the members and to support said row with the section subsequently disposed in the lowered position to receive a subsequent row of containers for elevation beneath the clamped row of containers to assemble said rows into a stack having the previously received row upwardly of the subsequently received row;

F. power drive means selectively motivating said one clamping member to and from said other clamping member;



G. control means responsive to the presence of the conveyor section at a position between said positions thereof as the section moves during the stroke toward the elevated position from the lowered position, said control means controlling the power drive of the clamping member to motivate said one member from said other member and to release a row clamped therebetween so that said row is supported on the section when the section attains the elevated position;

H. means for moving successive rows of stacked containers from the conveyor section onto the plate at the loading station when such section is at the elevated position; and

I. means for retracting the plate from the loading station and from beneath the pack while a pallet is disposed therein whereby the pack descends onto said pallet.

4,354,787

MICROFICHE COLLATING STACKER

Karl H. Gensike, Northridge, and Robert C. Marsh, Pacific Palisades, both of Calif., assignors to Photomatrix Corp., Santa Monica, Calif.

Filed Sep. 2, 1980, Ser. No. 183,305
Int. Cl.³ B65H *33/08*
U.S. Cl. 414—54 **2 Claims**

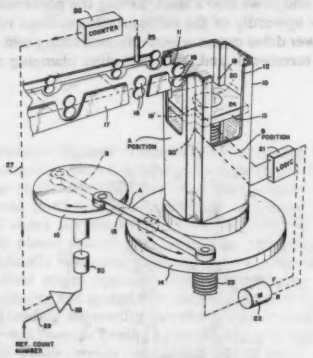
1. A microfiche collating stacker including, in combination:

(a) a vertical hopper having an interior cruciform cross section for accommodating microfiche received in the top of the hopper when the hopper is in either first or second positions at 90° to each other;

(b) a vertically movable platform in said hopper for supporting microfiche received therein;

(c) drive means connected to said hopper for moving said hopper from one to the other of its positions when actuated;

(d) feed means for delivery individual microfiche into the top of said hopper so that microfiche can be received and stacked in the hopper to form a first set when the hopper is in said first position and received and stacked in said hopper to form a second set at right angles to said first set when said hopper is in said second position;
(e) sensing means adjacent to said feed means for providing a signal each time a microfiche passes into the hopper;
(f) a counter for counting said signals;
(g) programming means for rotating said hopper to one of its two positions whenever said counter has counted to a



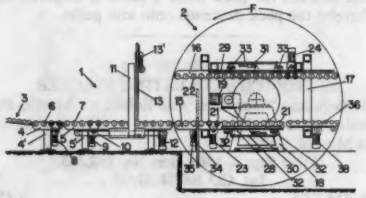
given reference count number so that the number of microfiche in each set received by the hopper when in said other of its positions corresponds to said reference count number; and
(h) means for moving said platform downwardly whenever the top of a stack of microfiche in said hopper is within a given distance of said top of the hopper so that additional microfiche can be received in the hopper after the platform is lowered whereby said first and second sets of microfiche can be easily manually separated as they are removed from the hopper.

4,354,788

AUTOMATIC SYSTEM FOR THE FORMATION AND DISTRIBUTION OF LAYERS OF GROUPS OF SHEETS

Giampiero Giusti, 42 Via S. Marco, 55100 Lucca, Italy

Filed Feb. 6, 1980, Ser. No. 119,179
Claims priority, application Italy, Feb. 21, 1979, 17702 A/79
Int. Cl.³ B65G *57/08*
U.S. Cl. 414—55 **7 Claims**



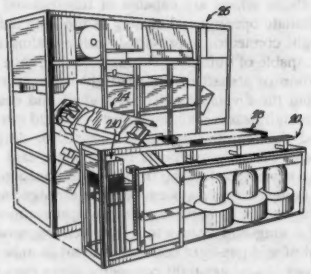
1. A machine for the formation and distribution of layers of groups of sheets, characterized in that it comprises a preparatory unit, formed by two horizontal planes placed at the same level, one after the other in longitudinal direction with respect to the machine and each of which comprises motor driven conveyor means, the motor driven means of the first one of said planes being able to be made to rotate in both directions in order to cause the groups of sheets to advance towards or move away from the second plane, said groups of sheets arriving on said first plane from a group of sheets production or formation machine, placed upstream, while the motor driven means of said second plane may be caused to rotate only in the direction which moves away from the first plane the groups of sheets which the second plane receives from the first, electric sensor control means being provided to start moving the motor driven means of the second plane only when a group of sheets is reaching it and to stop them when the group of sheets has passed completely over the second plane, said preparatory unit further comprising a stopping member, movable vertically over said second plane between a lowered position which stops the groups of sheets arriving on said second plane in order to be formed into a layer, and a raised position which allows feeding, downstream of said second plane, of the formed layer, said stopping member further being capable of sliding along fixed guides of the second plane and capable of being fastened at a distance from the separation area between the first and second planes, such to allow feeding to said second plane, of the desired number of groups of sheets for the layer to be formed, said control means further controlling the vertical movement of said stopping member as well as starting of the motor driven means of the first plane in the direction which moves the group of sheets away from the second plane as soon as the formation of the layer on said second plane has ended.

4,354,789

METHOD AND APPARATUS FOR TRANSFERRING ENVELOPES

James B. Ellis, Palatine; Mieczyslaw J. Lisiecki, Norridge, and Stephen Ruderman, Oak Park, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,355
Int. Cl.³ B65G *61/00*
U.S. Cl. 414—104 **13 Claims**



13. A method for transferring envelopes from a first station to a second station and for subsequently transferring envelopes from said second station to said first station wherein each said envelope has first and second opposite end edges, a bottom edge, and a top edge; said method comprising the steps of:
(a) providing and aligning a guide to extend between said first and second stations to guide said envelopes;
(b) providing first and second paddles spaced apart by an amount greater than the length of said envelopes and locating said paddles at said first station;
(c) holding a batch of envelopes between two spaced-apart holding members at said first station with the batch being located between said first and second paddles with the envelopes in face-to-face relationship with said first end edges of said envelopes being disposed substantially at and defining a first end of the batch and with said second end edges of said envelopes being disposed substantially at and defining a second end of the batch;
(d) moving said first and second paddles together in a first direction to contact said batch first end with said first paddle and to push said batch in said first direction out of

said first station, along said guide, and at least into said second station;

(e) holding a batch of envelopes between two spaced-apart holding members at said second station with the batch being located between said first and second paddles with the envelopes in face-to-face relationship with the first end edges of said envelopes being disposed substantially at and defining a first end of the batch and with said second end edges of said envelopes being disposed substantially at and defining a second end of the batch; and

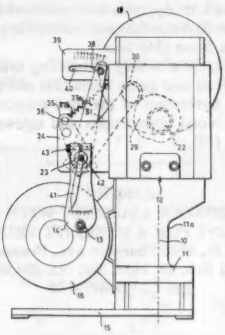
(f) moving said first and second paddles together in a second direction opposite to said first direction to contact the second end of the batch at said second station with said second paddle and to push the batch in said second direction out of said second station, along said guide, and into said first station between spaced-apart holding members at said first station.

4,354,790

FEED MECHANISMS

Walter Karl, Sydney, Australia, assignor to Utilux Pty. Limited, Australia

Filed Dec. 31, 1979, Ser. No. 108,524
Int. Cl.³ B23Q 7/06
U.S. Cl. 414—222 11 Claims



1. Apparatus for feeding work pieces to a work station, the apparatus comprising:

(a) a first shaft adapted to be driven;

(b) a second shaft rotatably mounted;

(c) drive means for transmitting drive from the first shaft for driving the second shaft in an oscillatory cycle of forward and return movement;

(d) stop means for limiting motion of the second shaft in the direction of return movement, the stop means comprising abutment means fixed to and extending outwardly from the second shaft, and a normally fixed, elongated stop arm, pivotally mounted for motion about an axis substantially parallel to the axis of the second shaft and having a manually accessible adjustment means for securing the stop arm in a desired position such that an engagement portion of the stop arm provides an abutment surface for said abutment means at a location remote from the adjustment means; and

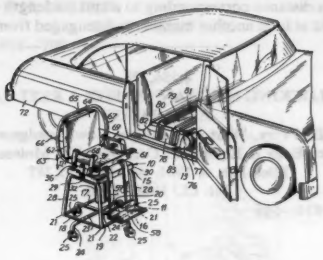
(e) a driven arm connected to the second shaft for applying motion to a feed device for the work pieces, the angular position of the driven arm relative to the second shaft being adjustable for controlling the forward limit of motion of the feed device.

4,354,791

WHEELCHAIR CONSTRUCTION

Robert A. Antonellis, 2324 Garfield St., Hollywood, Fla. 33022

Filed Jun. 29, 1979, Ser. No. 53,319
Int. Cl.³ B60N 1/08; A61G 5/00
U.S. Cl. 414—343 5 Claims



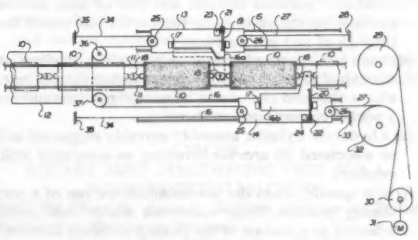
1. An improved wheelchair construction having seat transfer means cooperating with the seat of an adjacently positioned vehicle comprising: a wheeled base element having first guiding means thereon, a movable seat element selectively supported by said base element for controlled lateral movement thereupon, said base element having elevating means thereon for adjusting the vertical level of said seat element relative thereto; a platform adapted for support by an automobile seat cushion and having corresponding second guiding means thereon selectively communicating with said guiding means on said base element, whereby said seat element may be selectively moved between said base element and said platform to and from said vehicle, said first and second guiding means each having a set of tracks thereon, said seat element having wheeled means constrained by said tracks to permit only lateral movement; said second guiding means including a set of extendable track extensions interconnected to said platform and selectively engaging the tracks on said base element.

4,354,792

TRAIN POSITIONER

James E. Cornish, North Olmsted, Ohio, assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 135,640
Int. Cl.³ B65G 67/00; B61B 9/00
U.S. Cl. 414—359 10 Claims



1. In a train positioner for sequentially advancing a string of coupled railroad cars to a rotary car dumper in a step-by-step and a car-by-car sequence, each of said cars having rotatable couplings permitting the rotation of each car about a longitudinal axis, said rotary car dumper being adapted to invert a railroad car about said axis, said axis being colinear with the axis of the car coupling members of said car, in combination therewith the improvement which comprises at least two car pushing members adapted to sequentially engage a car's cou-

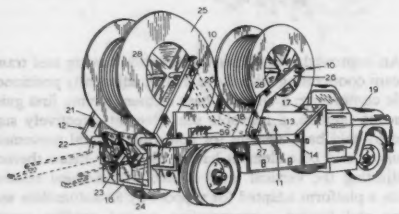
pling, advance said car towards said dumper, and hold said car in the advanced position from movement in either direction, and, driving means to drive at least one of said pushing members forwardly toward said dumper a distance corresponding to about the length of a car while said at least one member is engaged with a car while simultaneously retracting at least another one of said members rearwardly away from said dumper a distance corresponding to about the length of the car while said at least another member is disengaged from said car.

4,354,793

REEL LOCKING MECHANISM FOR A REEL LOADER APPARATUS

Marvin D. Perry, West Des Moines, Iowa, assignor to Mid-America Body & Equipment Co., West Des Moines, Iowa

Filed Feb. 6, 1981, Ser. No. 232,257
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—546 **2 Claims**



1. A mechanism for locking the spindle of a cable reel in a reel handling apparatus having a pair of lift arms supported on a portable frame for movement to reel loading and operating positions, said mechanism comprising:

(a) a spindle supporting means on the free end section of each lift arm including a transversely extended spindle receiving pocket having inwardly converging side wall portions such that the distance between said side wall portions adjacent the inner end of the spindle receiving pocket is less than the transverse dimension of said spindle,

(b) a spindle locking member movably supported on each lift arm including a jaw member movable into and out of a pocket closing position,

(c) each lift arm of a tubular construction, with said free end section terminating in a bifurcation to form said spindle receiving pocket between the inner adjacent ends of the bifurcated portions thereof, and one of said bifurcated portions having an opening therein for movement therethrough of said jaw member,

(d) each locking member housed within the confines of an associated lift arm with the jaw member thereof retractable within said one of said bifurcated portions and out of a pocket closing position therefor,

(e) a hydraulic cylinder assembly movably supported within an associated lift arm for actuating an associated locking member,

(f) said spindle, when the jaw members are out of a pocket closing position being receivable within said pockets, whereby an actuation of the locking members to move the jaw members into the pocket closing positions therefor, said spindle is engaged and moved within said pockets into frictional wedged engagement with said side wall portions against rotational and axial movements,

(g) each locking member comprised of a lever pivotally supported intermediate the ends thereof with said jaw member integrally formed at one end thereof,

(h) stop means comprising a pair of abutment members arranged at opposite sides of the lever pivotal support so that the lever is freely movable within a lift arm into and out of a pocket closing position for said jaw member, and

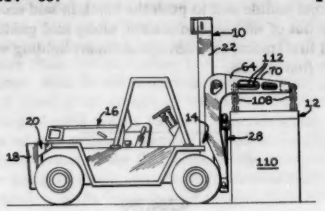
(i) means pivotally connecting a hydraulic cylinder assembly with the other end of each locking member.

4,354,794

CARRIAGE ASSEMBLY

John E. Macnab, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01041, § 371 Date Aug. 11, 1980, § 102(e) Date Aug. 11, 1980, PCT Pub. No. WO82/00455, PCT Pub. Date Feb. 18, 1982
PCT Filed Aug. 11, 1980, Ser. No. 251,529
Int. Cl.³ B66F *9/06*
U.S. Cl. 414—607 **17 Claims**



1. A carriage assembly (28) for a lift mast (22), comprising:

a frame (30) having elevationally spaced support (36) and guide (34) beams elevationally positionably mounted on said lift mast (22) with said support beam having opposite end portions (60,62);

a pair of load supporting arms (64) each individually pivotally connected to opposite end portions (60,62) of said support beam and extending therefrom in passing relation to said guide beam (34); and

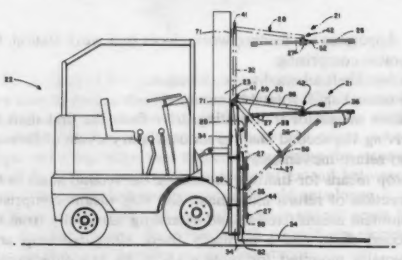
means (52,48,72) for movably connecting said load supporting arms (64) to said guide beam (34) and permitting unitary pivotal movement of the load supporting arms (64) about said pivotal connections and sideways relative to the lift mast (22).

4,354,795

LOAD STABILIZER ASSEMBLY WITH PIVOTAL MOUNT FOR A FORKLIFT TRUCK

Joseph G. Dutra, Jr., 4568 Thornton Ave., Fremont, Calif. 94536

Filed Feb. 13, 1981, Ser. No. 234,408
Int. Cl.³ B66F *9/18*
U.S. Cl. 414—622 **13 Claims**



1. A load stabilizer assembly for a forklift truck or the like, said assembly including assembly mounting means formed for mounting said assembly to a forklift truck proximate the forklift tines, clamp means extending outwardly of said assembly as mounted proximate said tines and oriented in generally superimposed vertically spaced relation to said tines, said clamp means including a downwardly facing load engaging surface, and the remainder of the assembly wherein the improvement in said assembly enabling compact storage of said clamp means is comprised of:

pivotal mounting means coupling said clamp means to said remainder of said assembly, said pivotal mounting means including:

(a) arm means,

(b) a first pivotal connection coupling said arm means to said remainder of said assembly,

(c) a second pivotal connection coupling said arm means to said clamp means, and

(d) latch means formed for latching said arm means in a deployed position extending away from said remainder of said assembly and formed for selective release of said arm means for movement to a stored position proximate said remainder of said assembly,

said first pivotal connection, said second pivotal connection, and said arm means being further formed for rotation of said arm means in a first direction upon release of said latch means and rotation of said clamp means in an opposite direction during pivotal movement from said deployed position to said stored position, and said clamp means being moved to a generally parallel orientation to said remainder of said assembly when in said stored position with said load engaging surface facing outwardly of said assembly to enable engagement of a load carried by said tines.

4,354,796

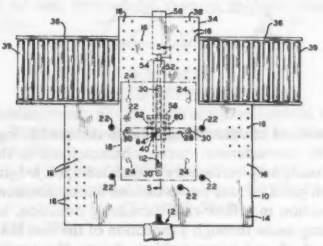
AIR FLOAT POWER TRANSLATION SYSTEM

Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865

Continuation-in-part of Ser. No. 924,958, Jul. 17, 1978, Pat. No. 4,179,106, which is a continuation of Ser. No. 815,676, Jul. 14, 1977, abandoned, which is a division of Ser. No. 684,725, May 5, 1976, Pat. No. 4,058,885. This application Dec. 4, 1978, Ser. No. 966,072

Int. Cl.³ B23Q *7/06*

U.S. Cl. 414—676 **9 Claims**



1. An air-float fixture support system comprising: a table having an upwardly facing upper surface, a workpiece fixture having a lower surface and being supported on said table upper surface, means for supplying a cushion of pressurized air between the fixture surface and the table surface to floatingly support the fixture thereon, an elongated slot in said table surface, a carriage mounted in said table below the table surface for reciprocal movement parallel to said table surface along said slot, said workpiece fixture having an opening in the lower surface thereof, a translation pin member carried by said carriage and protruding through said slot, means in said carriage for selectively extending said pin member to protrude above said table surface and enter the opening in the lower surface of said workpiece fixture to capture the workpiece fixture and for selectively retracting said pin member below said table surface to release the workpiece fixture, said fixture being rotatable around the axis of said pin on the cushion of pressurized air on said table while captured by said pin, and drive means for translating said carriage and said pin member carried thereby along said slot to translate said workpiece fixture when it is captured by said pin member.

4,354,797

FRONT LOADING HYDRAULIC EXCAVATOR

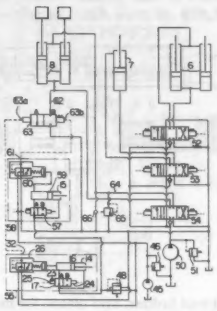
Kiyonobu Hirose, Ibaraki, and Taizo Izumiyama, Toride, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,278

Claims priority, application Japan, May 31, 1979, 54-67716; May 31, 1979, 54-67717

Int. Cl.³ E02F *3/86*

U.S. Cl. 414—700 **8 Claims**



1. An excavator comprising: a swivelling member mounted for swivelling motion on a travelling member; a boom pivotally moved by boom cylinders pivotally connected to said swivelling member; an arm pivotally moved by an arm cylinder pivotally connected to said boom; and a bucket pivotally moved by bucket cylinders pivotally connected to said arm; wherein the improvement comprises:

boom detecting means for detecting a pivotal displacement of the boom and producing a first pilot pressure substantially proportional to the detected pivotal displacement of the boom;

bucket detecting means for detecting a pivotal displacement of the bucket and producing a second pilot pressure substantially proportional to the detected pivotal displacement of the bucket;

control valve means including first and second valve switching pilot pressure ports;

first conduit means for introducing the first pilot pressure to the first valve switching pilot pressure port of said control valve means;

second conduit means for introducing the second pilot pressure to the second valve switching pilot pressure port of said control valve means; and

said control valve means being connected to the bucket cylinders in a manner to allow a piston side of the bucket cylinders to be drained.

4,354,798

ROTARY TOOL POSITIONING UNIT FOR A WOODWORKING MACHINE

Gabriel De Muynck, Ardooie, Belgium, assignor to Bekaert Engineering, Zwevegem, Belgium

Filed Apr. 22, 1980, Ser. No. 142,677

Claims priority, application Belgium, Apr. 23, 1979, 1/9365

Int. Cl.³ B27C *9/02*; B23Q *1/18*

U.S. Cl. 414—750 **6 Claims**

1. A rotary tool positioning unit adapted to be fixedly connected on an alignment surface of a machine frame for machining workpieces, said unit comprising:

a rotary tool holder having a longitudinal axis about which a tool held by said tool holder is adapted to be rotated;

means for independent translation of said tool holder in a first direction;

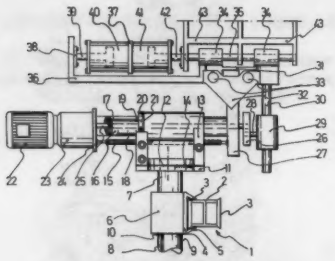
means for independent translation of said tool holder in a second direction perpendicular to said first direction;

means for independent rotation of said tool holder about a first axis;

means for independent rotation of said tool holder about a second axis perpendicular to said first axis;

one of said translation directions being parallel to one of said first and second axes of tool holder rotation; and,

means for imparting a reciprocating movement to said tool holder in a direction perpendicular to said longitudinal



axis of said tool holder, said means for imparting a reciprocating movement comprising first and second slide bearing means cooperating with said tool holder and oriented for sliding perpendicularly with respect to one another and an eccentric cam shaft drive means cooperating with said first and second slide bearing means whereby the rotational movement of said drive means is transmitted through said first and second slide bearing means in the form of a reciprocating movement imparted to said tool holder.

4,354,799

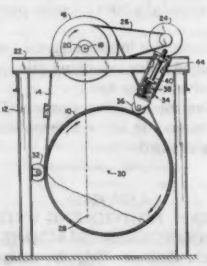
CONNECTOR FOR WIRE ROPE

George P. Hurst, 235 Hill St., Jackson, Calif. 95642

Division of Ser. No. 861,604, Dec. 19, 1977, Pat. No. 4,229,138, and a continuation-in-part of Ser. No. 763,188, Jan. 27, 1977, Pat. No. 4,078,298. This application Jan. 28, 1980, Ser. No. 115,658

Int. Cl.[3] B25J *13/00*; F16C *11/00*; B01F *7/00*

U.S. Cl. 414—756 1 Claim



1. In combination with a horizontally extending cylindrical drum for bearing a material for processing, a plurality of sheaves spaced above and supported over said drum for rotation about an axis parallel with the central axis of said drum, wire ropes extending around said drum and sheaves in a manner suspending said drum from said sheaves for rotation of said drum and sheaves together, each of said ropes terminating in opposite end portions, a wire rope connector for a coupling of said opposite end portions of each rope in an endless loop, said connector comprising first and second rope holding means, each rope holding means having radially outwardly opening grooves in which said wire ropes are seated and held in position extending generally radially outwardly of said sheaves and including a radially outwardly opening groove portion disposed to confront said sheaves and said drum with said wire rope interposed therebetween, and hinge means for connecting said rope holding means to one another, said hinge means having an axis of flexure substantially centered on and perpendicular to medial axes of said wire ropes when seated on one of said sheaves, for maintaining a neutral axis and permitting said rope holding means and said wire ropes to flex without substantial displacement of said wire ropes relative to a path of travel upon rotation of said sheaves and said drum wherein said hinge means comprises first and second hinge pieces having interlocking abutting surfaces, the abutting surfaces of said hinge pieces being characterized by radii of curvature defining a convex surface relative to the other abutting surface such that rotation of said hinge means causes translation of said neutral axis tending to track the medial axis of said wire ropes along the sheave.

4,354,800

METHOD OF CONTROLLING PUMP TURBINE

Takao Kuwabara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

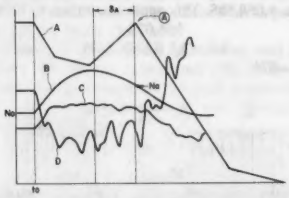
PCT No. PCT/JP79/00084, § 371 Date Dec. 4, 1979, § 102(e) Date Dec. 4, 1979, PCT Pub. No. WO79/00928, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 5, 1979, Ser. No. 187,848

Claims priority, application Japan, Apr. 13, 1978, 53/44654

Int. Cl.[3] F03B *15/08*

U.S. Cl. 415—1 14 Claims



1. A method of controlling a pump-turbine having an S-section in its characteristic curve, characterized in that wicket gates of said pump-turbine are controlled upon judging that the operation point of said pump-turbine has commenced to trace said S-section in a flow-rate increasing direction, said judgement being made through a detection of the fact that the rotation speed of said pump-turbine, during the tracing of said S-section up to its end in a flow-rate reducing direction, has come down below a predetermined speed.

4,354,801

REACTION FAN WITH NOISE SUPPRESSION

William P. LaBaire, Spencer, Mass., assignor to Coppus Engineerng Corporation, Worcester, Mass.

Filed Jan. 23, 1981, Ser. No. 227,623

Int. Cl.[3] F01D *1/20*

U.S. Cl. 415—80 9 Claims

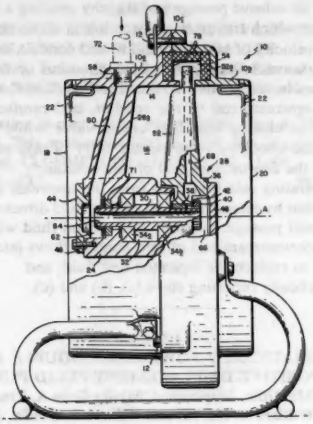
1. A reaction-type fan comprising in combination:

a housing structure having a circular interior wall defining a chamber, with opposed inlet and outlet openings communicating with said chamber, and with a collar positioned at a fixed central location within said chamber by support struts extending inwardly from said interior wall, said interior wall as well as said collar and said inlet and outlet openings having a common central axis;

a rotor assembly supported by said collar for rotation about said axis, said rotor assembly having blades extending radially outwardly from said axis towards said interior wall;

nozzles carried at the tip portions of said blades;

conduit means for directing a flow of a pressurized gaseous medium from the exterior of said housing to said nozzles, the arrangement of said nozzles being such that the reactive force of the pressurized gaseous medium exiting therefrom causes said rotor to rotate about said axis, the said rotation in turn causing ambient gases to be drawn through said housing via said inlet and outlet openings; and



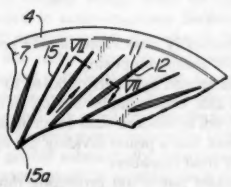
sound attenuating means for lessening the level of sound associated with the flow of said pressurized gaseous medium through said conduit means and said nozzles, said sound attenuating means including cylindrical sleeves of resilient sound absorbing material surrounding the flow path of said pressurized gaseous medium through said nozzles.

4,354,802

VANED DIFFUSER

Hideo Nishida; Fumio Koseki, both of Shimoinayoshi, and Ichiro Gyobu, Dejimamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,488
Claims priority, application Japan, Apr. 6, 1979, 54-44726[U]
Int. Cl.³ F04D *29/30*
U.S. Cl. 415—207 **7 Claims**



1. A vaned diffuser for a turbocompressor comprising a pair of diffuser plates defining therebetween a fluid channel, and a plurality of vanes arranged in said fluid channel defined between said diffuser plates to form a circular cascade, the improvement comprising rib means including at least one rib arranged on at least one of said diffuser plates in a surface area defined between adjacent vanes, said at least one rib having a height not less than one fifth of a height of said vanes and a leading edge located upstream of leading edges of said vanes as viewed in a fluid flow direction, the at least one rib has a curved configuration corresponding to the vanes between an inlet and an outlet side of the vanes, and wherein an inlet angle of a leading edge of the rib is less than an inlet angle of the vanes.

4,354,803

SAIL POWER DEVICE

Victor S. Korionoff, Jr., 83 Silencio St., Santol, Quezon City, and Miguel A. Magsaysay, 1575 Cypress St., Dasmarinas Village, Makati, Metro Manila, both of Philippines

Filed Jan. 9, 1978, Ser. No. 868,389
Int. Cl.³ F03D *5/06*
U.S. Cl. 416—81 **3 Claims**

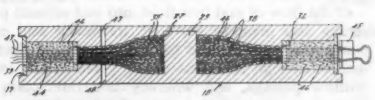
1. A sail power device the upper end of which is adapted to be secured to a rigid support and the lower end of which is adapted to be secured to a reciprocating work load, said sail power device comprising a diamond shaped sail disposed such that the upper and lower corners thereof are vertically aligned, while the other two corners thereof are horizontally aligned, a cable means secured to the peripheral sides of said sail, a sail stretcher means to which the two horizontally aligned corners of said sail are attached, and an upper and a lower bearing swivel means connected to the upper and lower corners of said cable means.

4,354,804

COMPOSITE TURBINE WHEEL, METHOD OF MANUFACTURE AND FIXTURE THEREFOR

Gerald S. Cruzen, Gregory, Mich., assignor to Williams Research Corporation, Walled Lake, Mich.

Filed Nov. 30, 1979, Ser. No. 99,005
Int. Cl.³ F01D *5/28*; F04D *29/26*
U.S. Cl. 416—230 **6 Claims**



1. A turbine wheel comprising a hub having layers of woven carbon cloth discs impregnated with carbon bearing resin, and turbine blades formed of carbon bearing resin and carbon reinforcing fibers, at least some of the fibers extending radially through a blade, then circumferentially at least part way around the hub and back through a blade in a continuous manner, said turbine blades also comprising chopped carbon fiber fillers impregnated by said carbon bearing resin.

4,354,805

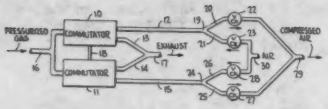
FLUID DYNAMIC ENERGY EXCHANGER

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Continuation-in-part of Ser. No. 44,656, Jun. 1, 1979, which is a continuation-in-part of Ser. No. 25,714, Mar. 30, 1979. This application Jul. 7, 1980, Ser. No. 166,487

Int. Cl.³ F04F 1/02

U.S. Cl. 417—54 30 Claims



1. Apparatus for transferring energy from a first fluid at relatively high pressure to a second gaseous fluid at relatively low pressure, said apparatus comprising:

an energy exchange conduit having an upstream end and a downstream end;

an exhaust passage;

an outflow passage;

an inflow passage;

first check valve means for controlling flow communication between said outflow passage and the downstream end of said conduit and permitting such flow communication only when the fluid pressure at the downstream end of said conduit exceeds the fluid pressure in said outflow passage by a predetermined amount;

second check valve means for controlling flow communication between said inflow passage and the downstream end of said conduit and permitting such communication only when the fluid pressure in said inflow passage exceeds the fluid pressure in the downstream end of said conduit by a predetermined pressure;

a source of said second fluid, at said relatively low pressure, connected to supply said second fluid to said inflow passage; and

commutator means for receiving said first fluid at said relatively high pressure and distributing said first fluid as slugs directed alternately and repetitively into said exhaust passage and the upstream end of said conduit, said commutator means including:

means for establishing a pressure wave at the upstream end of said conduit when a slug of said first fluid enters said upstream end, which pressure wave traverses said conduit at sonic velocity plus the velocity of fluid flowing in said conduit;

means for establishing a rarefaction wave at the upstream end of said conduit when the first fluid is diverted therefrom into said exhaust passage; and

aspiration means for aspirating fluid from the upstream end of said conduit into said exhaust passage by means of the flow of said first fluid into said exhaust passage;

whereby said pressure wave, in traversing said conduit, compresses second fluid therein, the second fluid being forced through said first check valve means into said outflow passage, and whereby said rarefaction wave, traversing said conduit, reverses the flow direction of said first fluid so that the first fluid flows toward said upstream end where it is aspirated into said exhaust passage by said aspiration means, said rarefaction wave additionally acting, upon reaching the downstream end of said conduit, to close said first check valve means to prevent outflow into said outflow passage and to open said second check valve means to permit entry of said second flow into said downstream end of said conduit.

28. The method of pressurizing a second gaseous fluid with a first fluid in an energy exchange conduit, said method comprising the steps of:

(a) directing a jet of said first fluid into the upstream end of said conduit and thereby creating a pressure wave which traverses said conduit at sonic velocity to compress second fluid in said conduit and open a first check valve which permits the compressed second fluid to egress from the downstream end of said conduit;

(b) diverting said jet of first fluid away from said conduit and into an exhaust passage and thereby creating a rarefaction wave which traverses said conduit at sonic velocity plus the velocity of said first fluid in said conduit, said rarefaction wave reversing the flow direction of first fluid it passes in the conduit so that the first fluid flows toward the upstream end of the conduit, said rarefaction wave further closing said first check valve while opening a second check valve to permit entry of said second fluid into the downstream end of said conduit;

(c) aspirating said first fluid from the upstream end of said conduit by means of the jet of first fluid directed into said exhaust passage, whereby said second fluid which enters the downstream end of said conduit flows into said conduit to replace the aspirated first fluid; and

(d) cyclically repeating steps (a), (b) and (c).

4,354,806

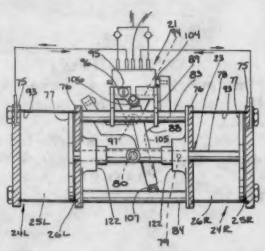
PNEUMATICALLY POWERABLE DOUBLE ACTING POSITIVE DISPLACEMENT FLUID PUMP

John R. McMillin, Maplewood, Minn.; Gene A. Tracy, Amery, Wis.; William A. Harvill and William S. Credle, Jr., both of Stone Mountain, Ga., assignors to The Coca-Cola Company, Atlanta, Ga. and The Cornelius Company, Anoka, Minn.

Division of Ser. No. 202,522, Oct. 31, 1980, Pat. No. 4,304,736, which is a continuation of Ser. No. 116,374, Jan. 29, 1980, abandoned. This application Aug. 13, 1981, Ser. No. 292,383

Int. Cl.³ F04B 17/00

U.S. Cl. 417—393 27 Claims



1. A pneumatically powerable double acting positive displacement fluid pump comprising

(a.) first and second cylinders opposed to one another on a common axis, each cylinder having an outboard head on an outer end, an inboard head on an inner end, a fluid port in each end, and a piston dividing the cylinder into inner and outer fluid chambers;

(b.) an elongate piston rod projecting through both of the inboard heads and connected to both of the pistons, one piston being on each end of the piston rod;

(c.) a plurality of elongate tie rods generally parallel to the axis of the cylinders and spaced from each other around the periphery of the cylinders, said tie rods fastening the cylinders to each other;

(d.) spacer tubes on the tie rods and in between the cylinders, said tubes spacing the cylinders from one another;

(e.) transverse slots in two adjacent tubes, on two adjacent tie rods;

(f.) a control cradle carried on the two adjacent tie rods, said

cradle being fixedly positioned in and by the transverse slots;

(g.) a control valve mounted in the cradle and fluidly connected to each cylinder for alternately connecting the cylinders to a source of compressed gas; and

(h.) a control valve actuator operatively connecting the piston rod to the control valve.

4,354,807

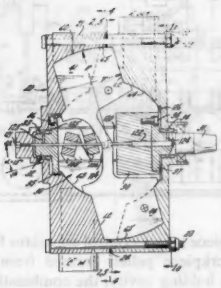
COMPRESSOR-EXPANDER OF THE VANE TYPE HAVING CANTED VANE CAVITY

Wayne C. Shank, Tucson, Ariz., and Thomas C. Edwards, Cocoa Beach, Fla., assignors to The Rovac Corporation, Rockledge, Fla.

Continuation-in-part of Ser. No. 858,680, Dec. 8, 1977, abandoned. This application May 2, 1980, Ser. No. 146,183

Int. Cl.³ F01C *1/00, 11/00, 21/04, 21/06*

U.S. Cl. 418—13 29 Claims



1. A rotary machine comprising, in combination, a housing having bearing means, stubshaft means journalled in the bearing means, the housing defining a disc-shaped main cavity having adjoining axial recesses, the main cavity being more particularly in the form of a doubly truncated sphere symmetrical about a vane axis which is canted with respect to the shaft axis and with the axial recesses thereof being defined by concave spherical surfaces concentrically opposed to one another, a rotor in the housing mounted on the stubshaft means, the rotor having a central spherical portion for mating with the concave spherical surfaces, the rotor including an integral Saturn-like ring of trapezoidal section symmetrical about the shaft axis, the ring extending to a position adjacent the peripheral wall of the main cavity dividing the cavity into first and second sides each of annular wedge shape having thick and thin portions arranged in complementary fashion, the rotor having diametrically extending slots aligned with the rotor axis to divide the rotor into sectors, the slots intersecting to create a hollow in the spherical portion of the rotor, the sectors being interconnected by cores spaced at the axial ends of the rotor, the stubshaft means extending axially outwardly from the cores for journalling in the bearing means, vane pairs in the slots, the vanes presenting a profile substantially corresponding to the profile of the truncated sphere to separate each side into successive chambers which vary cyclically in volume as the rotor rotates, the vanes having lateral edges lying in a cylindrical locus and having a thickness at least equal to T sin α where T is the thickness of the main cavity and where α is the angle of the vane axis with respect to the shaft axis, each side having an inlet port and an outlet port in straddling relation to the thin portion thereof, the vanes having laterally projecting shoulders along their lateral edges formed to mate with the respective concave spherical surfaces in the housing, the vanes comprising each pair being interconnected in coplanar relation by a central connector, the central connectors being axially offset for crossing one another in the hollow of the rotor.

4,354,808

VANE PUMP HAVING SLEEVE BEARING AND ROTOR RETAINING CONSTRUCTION

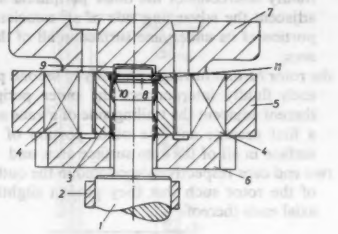
Rudolf Ilg, Aalen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,184

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902723

Int. Cl.³ F04C *2/00, 15/00;* F16B *21/18;* F16D *1/06*

U.S. Cl. 418—259 1 Claim



1. In a vane type pump having a drive shaft extending into the bore of a rotor having the drive shaft keyed in the rotor bore and being supported in a sleeve bearing at one side of said rotor and said pump having a face plate at the opposite side of said rotor adjacent the free end of said drive shaft;

the improvement comprising:

a groove (8) in said drive shaft and an annular open face recess (11) at an end of the bore of said rotor encompassing said groove;

a retaining ring (10) carried in said groove and confined radially within said recess against being dislodged from said groove to axially secure said drive shaft;

wherein the depth of said annular recess is at least equal to the thickness of said retaining ring in addition to a predetermined axial clearance between the drive shaft end and said face plate;

wherein said recess is open towards said face plate and said face plate has a recess (9) to accommodate said drive shaft end with said axial clearance; said latter recess having a diameter less than the diameter of said retaining ring so as to axially retain said retaining ring in said recess in said rotor.

4,354,809

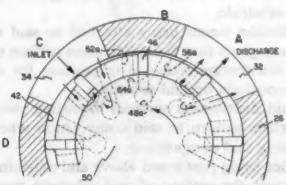
FIXED DISPLACEMENT VANE PUMP WITH UNDERVANE PUMPING

Jack G. Sundberg, Meriden, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,432

Int. Cl.³ F04C *2/00*

U.S. Cl. 418—268 6 Claims



1. In a vane pump of the type comprising: a housing with a cam surface therein defining a pumping cavity, the cam surface including a discharge arc, an inlet arc and a seal arc therebe-

tween; a rotor, having a plurality of outwardly facing radial slots, mounted for rotation within the pumping cavity, and a plurality of vanes respectively mounted in the slots for radial inward and outward movement, each vane having an undervane surface and a radially outer tip adapted to slidingly engage the cam surface during rotation of the rotor, the improvement comprising:

the undervane surface of each vane comprising an inboard surface portion and an outboard surface portion defined by two outboard surface segments;

the rotor having a plurality of first passages which each fluidly interconnect the outer peripheral surface thereof adjacent the advancing side of an associated vane and a portion of its undervane surface in all of the cam surface arcs;

the rotor further having a plurality of second passages which each fluidly interconnect the outer peripheral surface thereof adjacent the trailing side of a vane associated with a first passage and the other portion of its undervane surface in all of the cam surface arcs; and

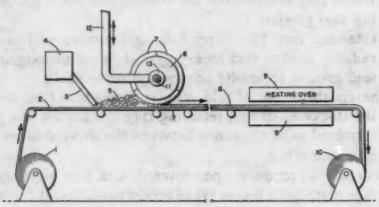
two end caps respectively mounted in the outboard portions of the rotor such that they project slightly beyond the axial ends thereof.

4,354,810

APPARATUS FOR DISTRIBUTING A FOAMED COMPOSITION ON A SUBSTRATE

Warren D. Stidham, Hixson, Tenn., assignor to Polysar Incorporated, Akron, Ohio

Filed Nov. 24, 1980, Ser. No. 209,656
Int. Cl.³ B29C *15/00*
U.S. Cl. 425—91 **10 Claims**



1. An apparatus for continuously distributing a viscous foamed fluid composition which has been applied to a movable substrate which comprises:

a rotatable member and at least two distribution means wherein said member is a tubular roll with a generally cylindrical shape;

means cooperating with said member to readily attach and detach said distribution means without ever interrupting the distribution of said composition on said substrate;

said distribution means being attached to said member in a radially outwardly extending manner so that the most radially distant surface of each of said distribution means is a distribution surface for distributing said composition on said substrate;

said distribution means being attached to said member so that at any given time the distribution surface of only one of said distribution means is in position for distributing said composition on said substrate;

each of said distribution surfaces imparting essentially the final surface pattern to said composition when used for distributing said composition;

said member being positioned above and extending substantially across the surface of said substrate normal to the direction of travel of said substrate;

means cooperating with said member to rotate said member about the central axis of said member and normal to the direction of travel of said substrate through an angle of one or two times 360° divided by the number of said distribution means;

locking means cooperating with said member to prevent rotation of said member; and

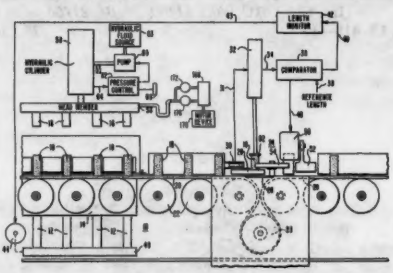
means cooperating with said member to oscillate said member from side to side normal to the direction of travel of said substrate.

4,354,811

WORKPIECE PELLET LENGTH CONTROL APPARATUS

Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 22, 1980, Ser. No. 171,221
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—140 **7 Claims**



1. In workpiece length control apparatus for determining the length of workpiece pellets formed from powder material provided in a holding cavity, the combination of

first means including a first member movable within said cavity for forming a workpiece pellet from said powder material,

second means including a second member positioned within said cavity for determining the length of the formed workpiece pellets and movable for removing said formed workpiece pellet from said pellet forming first means,

third means including a length measurement device cooperative with the workpiece pellet formed in said cavity by a previous operation of the firt and second means for determining the actual length of said workpiece pellet in relation to a desired length, and

fourth means responsive to said determined length and connected to determine the position of at least one of the pellet forming first means and the pellet removing second means for controlling the actual length of the workpiece pellet formed in said cavity by another operation of the first and second means.

4,354,812

METHOD AND APPARATUS FOR MOLD TEMPERATURE CONTROL

Horst K. Wieder, Watertown; Klaus A. Wieder, Helenville, and Joseph Haberkorn, Watertown, all of Wis., assignors to CITO Products, Inc., Watertown, Wis.

Filed Aug. 20, 1980, Ser. No. 179,886
Int. Cl.³ B29F *1/08*
U.S. Cl. 425—144 **19 Claims**

1. A mold temperature controlling apparatus for a fluid cooled mold, comprising:

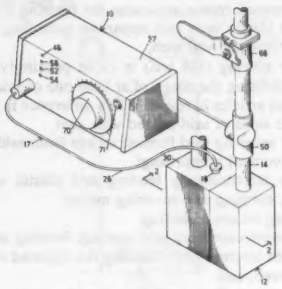
(a) temperature sensor means adapted to be mounted to a mold for providing an output signal indicative of the temperature of the mold, the temperature sensor means including a temperature probe having a thermistor adapted to contact the mold, a resilient shank containing electrical leads and having a contact head at its end which houses the thermistor, and a frustum shaped sleeve of resilient material which surrounds the shank and is

adapted to be wedged into a well formed in a mold to thereby hold the probe firmly in position on the mold, the temperature sensor means also including circuit means for providing a bias current to the thermistor and a voltage signal across the thermistor;

(b) means receiving the voltage signal across the thermistor indicative of the temperature of the mold and responsive thereto for providing a control signal when the temperature sensed exceeds a selected control temperature; and

(c) flow control valve means, connected to receive the control signal and adapted to be connected in the flow of cooling fluid to the mold, for opening and closing in response to the control signal to provide a flow of cooling fluid to the mold when the sensed temperature exceeds the selected control temperature and to cut off the flow of cooling fluid when the sensed temperature drops below the selected control temperature.

4. A mold temperature controlling apparatus for a fluid cooled mold, comprising:



(a) temperature sensor means adapted to be mounted to a mold for providing an output signal indicative of the temperature of the mold;

(b) means responsive to the signal indicative of the temperature of the mold for providing a control signal when the temperature sensed exceeds a selected control temperature; and

(c) flow control valve means, adapted to be connected in the flow of cooling fluid to the mold and connected to receive the control signal, for opening and closing in response to the control signal, the flow control valve means opening to provide a flow of cooling fluid to the mold when the sensed temperature exceeds the selected control temperature and the control signal is present and closing to cut off the flow of cooling fluid when the sensed temperature drops below the selected control temperature and the control signal is removed.

4,354,813

PLANT FOR PRODUCING CONTAINERS BY DRAWING-BLOWING OF PREFORMS IN PLASTIC MATERIAL

Andre-Marcel Collombin, Geneva, Switzerland, assignor to Motosacoche S.A., Geneva, Switzerland

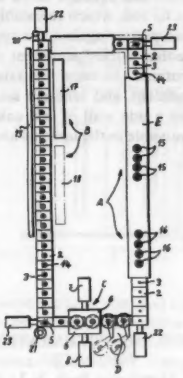
Filed Sep. 30, 1980, Ser. No. 192,232

Claims priority, application Switzerland, Oct. 9, 1979, 9069/79

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—182 **6 Claims**

1. In a plant for producing containers by drawing-blowing of preforms in plastic material, comprising a conveying device for preforms along a path along whih are disposed conditioning and heating means, a drawing-blowing station and an extraction station, the conveying device for the preforms comprising a plurality of independent supports disposed side by side and sliding in a guide extending along said path, which is formed of a plurality of rectilinear slide rails forming right angles with each other, and in which the feeding of the supports along the guide is controlled by pushing members disposed in each angle of the guide; the improvement in which each support is elongated rectangular and carries only one preform; the guide comprising wide sliding rails extending in one direction and having a width corresponding to the length of the support, and narrow sliding rails extending perpendicularly to the wide sliding rails and having a width corresponding to the width of the supports; the supports moving longitu-



dinally along the narrow sliding rails and transversely along the wide sliding rails so that the distance between the preforms carried by the supports is less along the wide sliding rails than along the narrow sliding rails, said path having two long sides along which said wide rails extend, interconnected at their ends by at least one short side along which said narrow rails extend, said drawing-blowing station being disposed along said short side, whereby the spacing between the preforms is augmented in the drawing-blowing station so as to facilitate the performance of a drawing-blowing operation thereon.

4,354,814

EXTRUDER WITH A SHEET EXTRUSION HEAD AND AN ASSOCIATED CALENDER

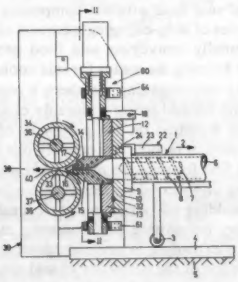
Albert Grimminger, Warmbronn, and Heinz Koch, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Werner and Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 184,340

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937204

Int. Cl.³ B29F *3/012, 3/04*

U.S. Cl. 425—186 **7 Claims**



1. An extruder with a wide extrusion head defining an elon-

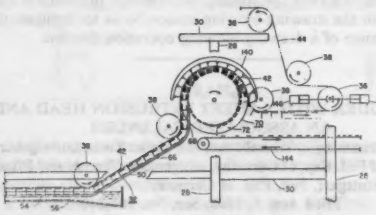
gated die for forming a sheet and an associated calender mounted in a frame, comprising an extruder housing movable into working position adjacent to said calender and into a position remote from said calender wherein the wide extrusion head, defining a sheet extrusion die, has an upper extrusion head part and a lower extrusion head part, means to separate the upper head part from the lower head part; clamping means to releasably press the upper extrusion head part and the lower extrusion head part together and which is mounted in an associated side wall of the calender and is provided with a hydraulically operable piston and cylinder drive unit, said clamping means comprising a tie rod, which releasably bears against the lower extrusion head part or against the upper extrusion head part by means of either a fixed abutment or by means of an axially variable abutment to vary the axial position of said axially variable abutment, and wherein said clamping means remains mounted on a side wall of said calender frame but is freely swingingly movable in the upward and horizontal directions.

4,354,815

APPARATUS FOR THE PREPARATION OF A FOOD PRODUCT

Robert F. Bardsley, Harrington Park, N.J.; Jonas Bortkevicius, Woodhaven, N.Y., and Charles D. Schoonmaker, Boonton, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 914,046, Jun. 9, 1978, Pat. No. 4,195,559. This application Sep. 12, 1979, Ser. No. 74,730
Int. Cl.³ B29J *1/00*
U.S. Cl. 425—236 **7 Claims**



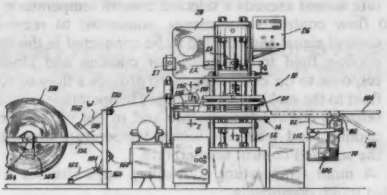
1. An apparatus for the molding of generally ready-to-consume friable or fragile food product strips having a predetermined configuration, such as a bacon analog or the like, from cooked strips of said food product comprising a plurality of guide rods; a series of strip-engaging members along said guide rods for sequentially conveying said food product strips; a plurality of first forming die means for said cooked strips being arranged on said strip-engaging members; a rotatable forming die wheel for said cooked strips; a plurality of second forming die means being mounted on the periphery of said forming wheel each adapted to receive respectively one of said cooked strips from said first forming die means; and means for operatively associating said second die means with a first forming die for conjointly molding said strips into their finished configurations; and further comprising first camming means having a camming surface extending in predetermined spaced relationship about a portion of the periphery of said rotatable forming die wheel for imparting radial movement to said first forming die means towards an associated second forming die means on said forming die wheel.

4,354,816

THERMOFORMING APPARATUS

Frank Schepp, Huntington, Conn., assignor to R & G Mold Company, Inc., Milford, Conn.

Filed Aug. 31, 1981, Ser. No. 298,077
Int. Cl.³ B29C *3/00, 17/04*
U.S. Cl. 425—302.1 **14 Claims**



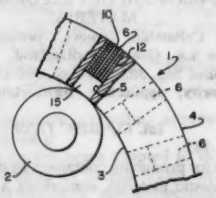
1. In a thermoforming apparatus for forming a plurality of articles on a plastic web, said apparatus including
means for heating said web,
means for placing said web in close proximity to a mold cavity defining the shape of at least one of said articles to form said articles in response to a difference in pressure on opposite sides of said heated web, and
means for severing said formed article from said web,
the improvement comprising:
means for intermittently feeding said plastic web to said heating, forming and severing means,
said feeding means including
means downstream from said heating, forming and severing means for intermittently moving the opposed edges of said plastic web, and
means upstream from said forming, heating and severing means for applying feeding tension to said web as it is intermittently advanced,
said intermittently moving means downsteam from said heating, forming and severing means including
a roller arrangement receiving therethrough the opposite edges of said plastic web, and
said feeding tension means upstream from said forming, heating and severing means including
a pair of rollers adjacent said forming means disposed in facing relation to each other, and
means connected to one of said rollers for reciprocally moving said roller vertically with respect to the other in response to completion or initiation of said forming cycle.

4,354,817

COMPOSITE EXTRUSION DIE

Robert W. Gilman, San Francisco, Calif., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 5, 1981, Ser. No. 290,380
Int. Cl.³ A01N *35/00*
U.S. Cl. 425—331 **7 Claims**



1. An extrusion die for a pellet mill of a type having compression means movable over a surface of the die;
said die having a compression side and a discharge side;

a plurality of extrusion passages interconnecting said compression side and said discharge side;

a heat and wear resistant insert disposed in each of said extrusion passages towards said discharge side of said extrusion passage; and

said insert being provided with die passages extending through said insert from one side of said insert towards said compression side to one side of said insert towards said discharge side.

4,354,818
MOULDING APPARATUS FOR COMPACTING POWDERED MATERIALS

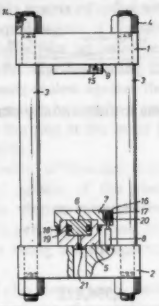
Kenneth J. Morris, 28 Berrisford Close, Market Drayton, Shropshire, England (TF9 1LG)

Filed Apr. 6, 1981, Ser. No. 251,291

Claims priority, application United Kingdom, Apr. 11, 1980, 8012105

Int. Cl.³ B30B *5/02*

U.S. Cl. 425—405 H **15 Claims**



1. Moulding apparatus for compacting powdered materials into desired shapes comprising a fixed press frame two opposite side of which are formed by a pair of spaced apart members, a clamping cylinder mounted on one of said members, an isostatic moulding pressure vessel with a removable end member and means pivotably mounting said pressure vessel for movement between an operating position in which said pressure vessel lies between said spaced apart members and can be acted on by said clamping cylinder and an ejecting and filling position in which said pressure vessel is not located between said spaced apart members and in which said removable end member of said pressure vessel can be removed to allow removal of a moulded compact from said pressure vessel and filling of powdered material into said pressure vessel to form a further compact.

4,354,819
MULTI-PIVOTABLE MOLD CARRIER CLAMPING APPARATUS

Jakob Wirz, Territet-Montreux, Switzerland, assignor to Spühl AG, St. Gallen, Switzerland

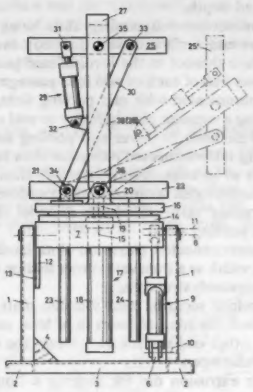
Filed May 20, 1981, Ser. No. 265,313

Claims priority, application Switzerland, May 30, 1980, 4238/80

Int. Cl.³ B29C *1/00, 3/00, 7/00*

U.S. Cl. 425—409 **8 Claims**

1. A tool carrier, particularly for mounting expanded plastic molds, comprising: a base frame (1–6), a table plate (7) mounted to the base frame and pivotable about a horizontal axis (8), a closing unit rotatably mounted on the table plate, said closing unit including a base plate (16) carrying upper and lower clamp plates (25, 22), a plurality of guide members (30, 23, 24) for the clamp plates, and first drive unit means (17) for moving the two clamp plates towards or away from each other to close or open the unit, the lower clamp plate lying adjacent the base plate and movable by means of said guide members (23, 24) parallel to the base plate (16), second drive unit means



(29) disposed between the base plate and the upper clamp plate for pivoting the upper clamp plate relative to the lower clamp plate, a yoke (26–28) pivotally connected to the base plate, and means pivotally mounting the upper clamp plate in the yoke.

4,354,820
EXTRUSION DIE AND METHOD FOR PRODUCING EXTRUSION DIE FOR FORMING A HONEYCOMB STRUCTURE

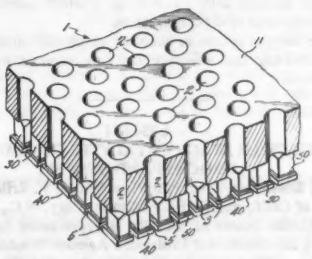
Shinichi Yamamoto, Takahama, and Toshihiko Ito, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 186,268, Sep. 11, 1980. This application Feb. 18, 1981, Ser. No. 235,725

Claims priority, application Japan, Sep. 12, 1979, 54-117626; Feb. 18, 1980, 55-19563

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—461 **12 Claims**



1. A method for producing an extrusion die to be used in forming a honeycomb structure provided with numerous axially extending passages which are separated by thin walls, comprising the steps of:

preparing from a single metallic block a die body having opposing end surfaces and a shape and size corresponding to those desired for said extrusion die,

forming numerous discrete initial feed passageways in said die body for initially receiving and feeding an extrudable material of said honeycomb structure and interconnected pooling slots for pooling and distributing said extrudable material directly fed from said feed passageways temporally,

said feed passageways being formed from one of said end surfaces of said die body towards the other end surface opposed to said one end surface in an axial direction of said die body at predetermined intervals to a predetermined depth,

said interconnected pooling slots being formed from said other end surface of said die body towards said one end surface thereof to the level of said predetermined depth,

the inner end of each of said feed passageways being directly communicated with said pooling slots,

securing a metallic plate directly to said other end surface of said die body to cover said pooling slots,

forming interconnected extrusion slots in said metallic plate so as to be respectively narrower than but in register and communicated with said interconnected pooling slots for extruding said extrudable material distributed through said pooling slots,

said interconnected extrusion slots having the same shape and width as a transverse cross section of said walls of said honeycomb structure,

and, before securing said metallic plate to said other end surface, forming recesses in at least one of the said plate and other end surface to increase the area of securement therebetween.

10. An extrusion die for making a honeycomb structure, comprising:

an integral metallic die body having two opposed surfaces from one of which a multiplicity of discrete feed passageways extend inwardly to a level of about 13 mm. to about 16 mm. toward the other of said surfaces and having in said other surface a grid network of criss-crossing pooling slots running transverse to said passageways and forming a multiplicity of intersections and being interconnected throughout said network and extending from said other surface toward said one surface to said level at which said passageways meet said slots for direct communication, said pooling slots being formed by individual columns integral with said die body,

the number of said feed passageways being substantially less than said pooling slot intersections, and

a multiplicity of discrete metallic platelets each larger than said columns in transverse dimensions and nonintegral with said die body but respectively bonded permanently to said columns and together forming a grid network of interconnected extrusion slots respectively registering on said pooling slots but having a width substantially narrower than said pooling slots,

there being a recess in each set of platelet and column for increasing the effective bonding contact area therebetween.

4,354,821

MULTIPLE STAGE CATALYTIC COMBUSTION PROCESS AND SYSTEM

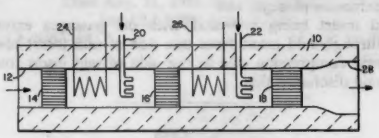
John P. Kesselring, Mountain View; Wayne V. Krill, Sunnyvale, both of Calif., and G. Blair Martin, Cary, N.C., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

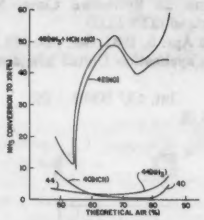
Filed May 27, 1980, Ser. No. 153,074

Int. Cl.³ F23D *3/40*

U.S. Cl. 431—7 9 Claims

1. A process for combusting a nitrogen-containing fuel with high efficiency and low levels of NO_x emissions, comprising the steps of directing a flow of the fuel in series through at least two fuel-rich combustion zones each having a bed of a catalytic material, combining air with the fuel in each zone to form a fuel-rich mixture with the percentage of theoretical air in the mixture being established at the value where a minimum of NO_x precursors is formed upon combustion in the presence of the catalytic material within the respective zone, combusting the mixture in each zone at a temperature $<2600°$ F. to form exhaust products, directing the exhaust products from the last fuel-rich zone in the series into a final combustion zone having a bed of catalytic material, combining air with the exhaust products in the final zone to form a mixture having a stoichiometry of at least 100% of theoretical air, and combusting the





mixture in the final zone to substantially complete combustion of the fuel.

4,354,822

ATOMIZER BURNER FOR OIL FIRING PLANT

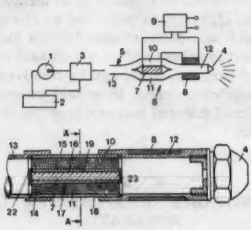
Ingvard M. Madsen, Sonderborg, and Niels L. Andersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 5, 1980, Ser. No. 146,795

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919763

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 11 Claims



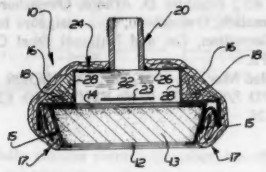
1. An atomizer burning assembly for an oil burner comprising, conduit means providing a conduit for transporting a fluid, said conduit means having internal wall surface means contactable by said fluid and external wall surface means isolated from said fluid, an atomizer nozzle attached to the outlet end of said conduit means, electrical circuit means including power means connected in series with a heating element and a PTC resistor element, said elements being in heat transmitting contact with said external wall surface means with said PTC resistor element being upstream relative to said heating element to control the heat generated by said heating element in accordance with the temperature of said fluid to maintain a substantially constant temperature for said fluid.

4,354,823

NON-AIR COOLED RADIANT BURNER

Arnold L. Buehl, Solon, and Werner H. Zwipf, Parma, both of Ohio, assignors to Slyman Manufacturing Corporation, Cleveland, Ohio

Filed Jan. 19, 1981, Ser. No. 226,188
Int. Cl.³ F23D 13/12
U.S. Cl. 431—328 7 Claims



1. A gas-fired radiant burner comprising:

a gas-permeable matrix of refractory fiber material having a generally equal degree of porosity throughout, the matrix having an inner face, an outer face, and a gas non-permeable peripheral edge separating the faces;

a plenum means sealed against the periphery of the inner face of the matrix to supply a pressurized combustible gas thereto for burning at the outer face of the gas-permeable porous matrix;

a flexible blanket of thermal insulation material wrapped around the outside of the plenum means to thermally insulate the plenum means from high temperature gas by-products generated by said burning, an edge portion of the blanket being biased against the edge of the matrix; and

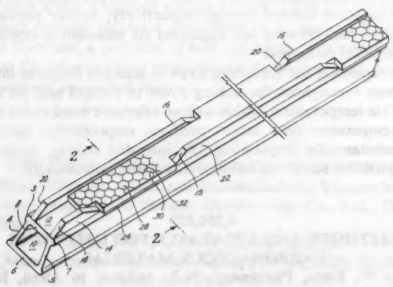
a plurality of clip means positioned at spaced intervals about the matrix edge and engaging the edge portion of the blanket to maintain it in its biased position against the matrix edge, the clips being supported solely by the plenum means.

4,354,824

METHOD AND DEVICE FOR REDUCING HEAT FLOW FROM A WORKPIECE TO A SKIP PIPE

Frank Campbell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 2, 1981, Ser. No. 250,502
Int. Cl.³ F27D 1/16, 3/02
U.S. Cl. 432—3 9 Claims



1. A method for reducing heat transfer in a high temperature environment from a workpiece to an upper surface of an internally cooled skid pipe comprising:

(a) securing at least two transversely spaced apart skids, having leading ends, on the upper surface of said pipe, said transversely spaced apart skids alternatingly repeating themselves for substantially the length of said pipe,

(b) securing a reinforcement frame to the upper surface substantially between said spaced apart skids and between the upper surface and the workpiece,

(c) projecting the reinforcement frame with an insulator; and

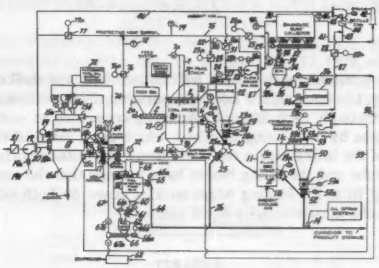
(d) projecting the reinforcement frame from the upper surface less than the skids.

4,354,825

METHOD AND APPARATUS FOR DRYING COAL

Donald L. Fisher, Milton; Thomas B. Kearns, Danville, and Edward T. Maciejewski, Catawissa, all of Pa., assignors to McNally Pittsburg Mfg. Corp., Pittsburg, Kans.

Filed Feb. 20, 1981, Ser. No. 236,250
Int. Cl.³ F23G 5/04; F27B 15/00; F26B 15/12
U.S. Cl. 432—14 28 Claims



1. A coal drying apparatus comprising a coal dryer through which coal is fed in heat exchange relationship with a hot gas to heat the coal to a high temperature below the temperature which would bring about combustion, thereby removing moisture from the coal, a combustor for generating the hot gas supplied to the coal dryer, means for supplying the hot gas from the combustor to the coal dryer, a coal cooler through which the dried coal is fed in heat exchange relationship with ambient air to cool the coal quickly to slow the oxidation rate, said cooler having an inlet through which the coal is introduced from the dryer, an outlet from which the coal is discharged from the cooler and means defining a flow passage intermediate the inlet and outlet, means for introducing the ambient air into the cooler for flow through the coal in said flow passage, means for removing the dried and cooled coal from the cooler outlet as a useful product, and means for supplying the air heated in the cooler to the combustor.

4,354,826

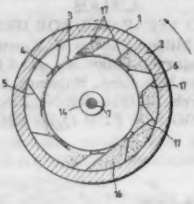
PROCESS OF DRYING AND CALCINING BULK MATERIALS

Gerhard Krüger, Frankfurt am Main, Fed. Rep. of Germany, and Werner Kepplinger, Linz, Austria, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,285
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949479
Int. Cl.³ F26B 9/12; F27B 7/02; F26B 7/14
U.S. Cl. 432—18 6 Claims

1. In a process for drying and/or calcining bulk material in a rotary kiln comprising means for feeding bulk material into said kiln at one end, means at the other end for withdrawing bulk material, means for passing hot gases in counter-current flow to said bulk material and contacting said bulk material with said hot gases, a centrally disposed tube being disposed axially within said rotary kiln toward the bulk material discharge end of said rotary kiln, whereby an annular space is defined between the outer wall of said central tube and inner

wall of said rotary kiln, means for passing hot gases within said central tube and means for passing said bulk material through said annular space whereby said bulk material is heated by indirect heat exchange with hot gases within said tube, the improvement which comprises trickling said bulk material over the outside of both sides of said central tube in substantially equal amounts, said central tube being secured to the shell of said rotary kiln by means of lifting blades, each lifting



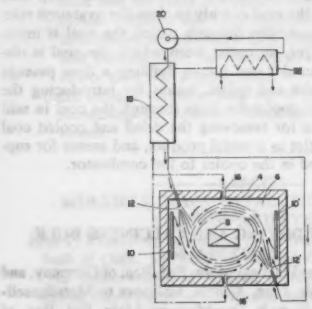
blade being connected at its trailing end with the shell of the rotary kiln such that it does not permit bulk material to pass therethrough, each lifting blade being connected to said central tube by connecting members which cause material falling out of the lifting blades to trickle down the outside surface of said tube and the lifting blades have a shape that the material falling from the leading edges trickles down on both sides of said tube in substantially equal amounts.

4,354,827

PROCESS AND DEVICE FOR IMPROVING HEAT EXCHANGE IN FURNACES HEATED BY RADIANT HEATERS

Roland R. Kissel, Le Vesinet, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 17, 1981, Ser. No. 255,244
Int. Cl.³ F26D *7/04*; F27B *3/22*
U.S. Cl. 432—21 **12 Claims**



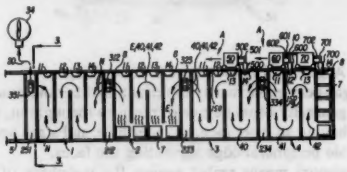
1. A process of heating a load positioned within the heat treatment chamber of a furnace, comprising the steps of (I) radiantly heating the load by means of heat that radiates directly from at least one radiant heater in the chamber, (II) additionally convectionally heating the load by contacting the load with at least one continuous stream of heated gas that is blown, under pressure, into the chamber, (III) continuously exhausting hot gas from the chamber in accordance with the volume of incoming gas being blown into the chamber, and (IIII) circulating the hot exhaust gas, under a pressure lower than the pressure under which incoming gas is blown into the chamber, through a heat exchanger, outside the chamber, into heat exchanging relation with incoming gas being blown into the chamber, to heat the incoming gas, prior to blowing such gas into the chamber, and to cool the hot exhaust gas exiting the chamber.

4,354,828

METHOD AND APPARATUS FOR PRODUCING UNIFORMLY BAKED ANODES

Charles M. Benton; Homer M. Charlton, both of Owensboro, Ky.; Wade L. Van Winkle, Tell City, Ind.; Jerry A. Meyer, Owensboro, Ky.; Franklin D. Arnold, Owensboro, Ky., and Anthony Kamalich, Owensboro, Ky., assignors to Southwire Company, Carrollton, Ga. and National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1981, Ser. No. 245,006
Int. Cl.³ F27D *7/00*; F27B *9/40*; F27D *19/00*; F27B *9/00*
U.S. Cl. 432—24 **7 Claims**



1. In a method for controlling the baking cycle of a carbon anode ring furnace of the type having a series of baking pits connected by heating flues in which heat is introduced into at least one of said pits by burners communicating therewith, said burners being of the type which combine and combust a variable air flow with a constant ratio of gaseous fuel, while succeeding pits are heated by hot products of combustion flowing through the connecting flues in order to maximize the thermal efficiency of the furnace and to produce uniformly baked carbon anodes of uniform electrical resistivity, the improvement comprising:

(a) detecting the temperatures of those baking pits and also the connecting heating flues of said furnace being fired; and transmitting corresponding pit and flue temperature signals to a computing means which contains preselected target profiles of said temperatures verses time;

(b) computing a plurality of control errors by comparing said pit and flue temperatures with current values calculated from said preselected target temperature-time profiles, respectively; and, if said temperatures are not substantially equal to the values calculated by said preselected profiles, then computing a control action for each of the burners of said furnace corresponding to said errors, respectively;

(c) controlling the air flow to said burners in response to said computed control action, respectively; further provided that said burners are regulated to maintain a constant air/fuel ratio; and

(d) repeating the foregoing steps at selected frequent intervals throughout the baking cycle to control said pit and flue temperatures within a close tolerance band about said temperature-time target profiles, respectively, thereby substantially duplicating the intended baking cycle to produce anodes of substantially uniform resistivity.

4,354,829

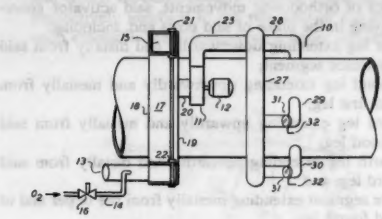
METHODS AND APPARATUS FOR CALCINING CARBONACEOUS MATERIAL

James W. Estes, Piscataway, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Apr. 29, 1981, Ser. No. 258,825
Int. Cl.³ F27B *7/32*
U.S. Cl. 432—117 **10 Claims**

1. Apparatus for calcining carbonaceous material comprising a rotary kiln; substantially annular plenum means disposed circumferentially about the exterior of said kiln, said plenum

means including a first stationary portion and a second portion mounted for rotation with said kiln with said first and second portions being juxtaposed with respect to one another to define



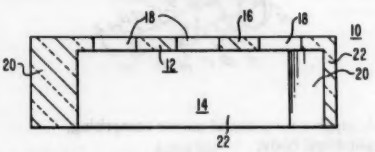
a substantially annular plenum chamber; fan means for passing oxygen enriched air through said plenum means and means for introducing said oxygen enriched air passed through said plenum means into the interior of said kiln.

4,354,830

CERAMIC GREENWARE SUPPORT

James R. Gamble, Greensburg; Lear C. Herrold, Derry, and Rowland S. Baran, Latrobe, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1980, Ser. No. 212,282
Int. Cl.³ F27D 5/00
U.S. Cl. 432—258 23 Claims



1. Apparatus for supporting ceramic insulator greenware having first and second portions, comprising: a first plate having at least one hole therein, said hole having a predetermined diameter selected to allow said first portion of said ceramic insulator greenware to pass therethrough but not allow said second portion of said ceramic insulator greenware to pass therethrough; and integral support means integrally connected with and extending a predetermined distance from and below said first plate for supporting said first plate said predetermined distance above a support surface to permit said second portion of said ceramic insulator greenware to be supported by said first plate and a plurality of said apparatus to be stacked one upon the other without interfering with said ceramic insulator greenware supported thereon.

4,354,831

CRUCIBLE FOR PRECISION CASTING DEVICE

Tsutomu Shinkawa, Itami, and Hiroaki Tokuda, Yamato, both of Japan, assignors to Sansha Electric Mfg. Co., Ltd., Osaka, Japan

Filed Feb. 24, 1981, Ser. No. 237,998
Claims priority, application Japan, Feb. 28, 1980, 55-24838
Int. Cl.³ F27B 14/10
U.S. Cl. 432—263 5 Claims

1. A crucible having a tubular body with a bottom wall, said body and bottom wall being divided vertically into a plurality of segments, each of said segments having a support portion to be supported by supporting means at its upper part and a center of gravity deviating horizontally from said support portion, and at least one top corner of each segment having an oblique tapered portion on the dividing plane whereby the lower ends

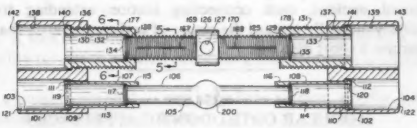
of said segments come apart when the segments are hung at said support portion.

4,354,832

ORTHODONTIC BIASSING DEVICE WITH DEFORMED SCREW THREADS

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 104,310, Dec. 17, 1979, which is a continuation-in-part of Ser. No. 785,587, Apr. 7, 1977, Pat. No. 4,200,979. This application May 13, 1980, Ser. No. 149,304
Int. Cl.³ A61C 3/00
U.S. Cl. 433—7 4 Claims



1. A method of fabricating an orthodontic biassing device comprising at least first and second body members having oppositely threaded bores therein, and an elongated threaded member having end portions which are oppositely threaded, said elongated threaded member being threadably engaged in said threaded bores of said body members, the method comprising:

assembling the biassing device by threadably engaging said elongated threaded member into said first and second body members;

unthreading said elongated threaded member from said first and second body members to cause said first and second body members to separate from each other and to thereby expose at least a portion of the threaded end portions of said elongated threaded member; and

impacting at least a portion of the exposed threaded portions of said elongated threaded member to deform threads thereof so as to provide an interference, but threadable, fit of said elongated threaded member in the respective threaded bores of said body members when it is threaded back into said body members.

4,354,833

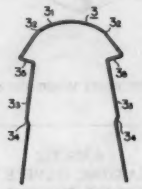
ORTHODONTIC APPLIANCE

Kinya Fujita, No. 326, Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed Dec. 15, 1980, Ser. No. 216,737
Claims priority, application Japan, Aug. 8, 1980, 55/112498[U]
Int. Cl.³ A61C 3/00
U.S. Cl. 433—20 5 Claims

1. In an orthodontic appliance for correcting dental malocclusion comprising a one-piece preshaped orthodontic wire, a plurality of brackets adapted to be affixed to the lingual surfaces of the teeth of the dental arch of a patient, said dental arch comprising central incisor, side incisor, canine, first pre-

molar, second premolar and first molar teeth, said orthodontic wire being adapted to be secured to and apply force against said brackets so that said orthodontic wire is effective for changing the positions of the teeth, the improvement which comprises: said orthodontic wire comprises a central arch-shaped section having a substantially uniform curvature corresponding to the desired curvature of the central portion of the dental arch of the patient consisting of the lingual surfaces of the incisor and canine teeth, a pair of lateral sections, each



lateral section being substantially linear and corresponding to a line extending between the lingual surfaces of the premolar and molar teeth with the respective ends of said central arch-shaped portion being horizontally transversely outwardly offset from the adjacent ends of said lateral sections, and a pair of connecting sections connecting the respective ends of said central arch-shaped portion with the adjacent ends of said lateral sections, each connecting section extending transversely inwardly toward the center of said central arch-shaped portion a short distance.

4,354,834

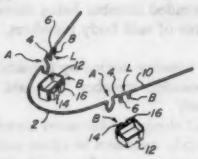
MODULAR ORTHODONTIC APPLIANCES

William L. Wilson, 15 Dix St., Winchester, Mass. 01890

Filed Feb. 21, 1978, Ser. No. 879,436

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—21 **15 Claims**



1. A lingual assembly for mounting on the lingual side of the teeth of an orthodontic patient, said assembly comprising:

a lingual tube bracket for mounting on a first molar of the patient, said bracket including:

a first mesial tube having a generally rectangular opening; and

a second distal tube having a generally rectangular opening, said tubes being generally parallel to each other and lying along generally vertical axes when mounted on the molar; and

a lingual wire, having a longitudinal axis for use in the patient's mouth for effecting selective teeth movements, said wire including:

a first mesial post having a generally rectangular cross section receivable in said first mesial tube;

a second distal post having a generally rectangular cross section receivable in said second distal tube, said posts being generally parallel to each other and lying in the same plane and perpendicular to the longitudinal axis of said lingual wire;

an extender segment extending distally from said distal post which is bendable for use in tooth movement;

a connector segment extending mesially from said mesial post;

and adjustable activator extending mesially from said connector segment for accomplishing any one of a large variety of orthodontic movements, said activator generally lying in the plane of said posts and, including:

a first leg extending downwardly and distally from said connector segment;

a second leg extending downwardly and mesially from said first leg;

a third leg extending upwardly and mesially from said second leg;

a fourth leg extending upwardly and distally from said third leg; and

a wire segment extending mesially from the upper end of said fourth leg.

4,354,835

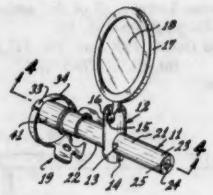
SUPPORT FOR MOUNTING METAL MIRROR ON TEETH

Cheri J. Lewis, 240 S. La Cienega Blvd. #301, Beverly Hills, Calif. 90211

Filed Apr. 13, 1981, Ser. No. 253,796

Int. Cl.³ A61B *1/24*

U.S. Cl. 433—30 **4 Claims**



1. A support for a dental mirror comprising;

a cylindrical body;

a link slideably mounted on said body so that the link slides axially along and rotatably about said body;

said link having a socket formed at one end;

a disk-shaped mirror, having a radially protruding ball formed thereon;

said ball being disposed within said socket to swivel in relationship thereon; and

a spring clip capable of gripping a human tooth;

spring means for releasably mounting said spring clip on one end of said body.

4,354,836

ARTICULATOR DEVICES FOR REPRODUCING THE MOVEMENTS OF THE MANDIBLE

Pierre J. Santoni, 1, Avenue Jean Jaures, 13700 Marignane, France

PCT No. PCT/FR80/00029, § 371 Date Oct. 26, 1980, § 102(e) Date Oct. 23, 1980, PCT Pub. No. WO80/01753, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 25, 1980, Ser. No. 201,414

Claims priority, application France, Feb. 26, 1979, 79 05426

Int. Cl.³ A61C *19/04*

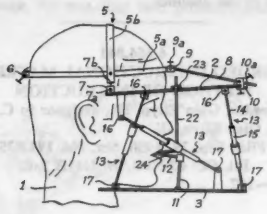
U.S. Cl. 433—73 **11 Claims**

1. A dental device comprising:

means for analogically converting the movements of a patient's mandible into electric signals, comprising an upper plate and a lower plate, said plates to be fixed to the patient's skull and mandible respectively, and six sensors of linear displacement which have ends articulated respectively to said upper and lower plate;

and a dental articulator comprising two plates on which are fixed respectively a cast of the patient's upper and lower

jaw, said articulator plates being connected with each other by six extensible stems, each having two ends which are articulated respectively to said two articulator plates and which six stems occupy relative positions which are respectively identical to the positions of the six sensors, each extensible stem comprising a linear servomotor;



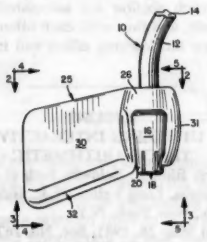
and electronic means comprising electronic circuits connecting respectively each servomotor to a sensor so that said servomotor moves the extensible stem carrying it and reproduces accurately the elongation movements of the sensor.

4,354,837

DENTAL APPLIANCE FOR USE IN COMBINATION WITH A SALIVA EJECTOR

Charles E. Moore, 365 N. Church St., Tupelo, Miss. 38801

Filed Nov. 25, 1981, Ser. No. 325,010
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—91 5 Claims



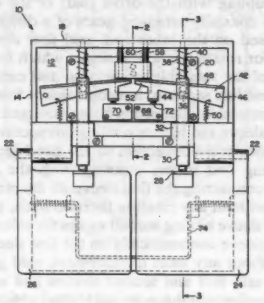
1. A dental appliance for use in combination with a saliva ejector having a flexible hollow suction tube and a terminal cap secured to one end of the suction tube and including a plurality of slotted grooves laterally spaced apart in substantial parallel alignment about the periphery of the cap, said appliance comprising a collar having a bore adapted to fit over said suction tube, a relatively flat blade-like protrusion extending from one side of said collar, a depending locking finger extending from another side of said collar including means for engaging any preselected one of said slotted grooves upon depressing said collar.

4,354,838

FOOT CONTROLLER FOR DENTAL INSTRUMENTS OR THE LIKE

Gerd Hoyer, Karlsruhe, and Helmut Pietschmann, Karlsbad, both of Fed. Rep. of Germany, assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,598
Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017245
Int. Cl.³ A61C *1/02*
U.S. Cl. 433—101 10 Claims



1. A foot controller for initiating and controlling the flow of a utility service to a dental instrument, said controller comprising:

(a) a housing adapted to rest on a floor surface, said housing having front and rear walls;

(b) a pair of foot pedals hinged to said housing for movement about a horizontal axis;

(c) bias means for urging said pedals upwardly to a rest position;

(d) a signal generator within said housing including a single movable control element, said generator producing an output signal in response to the movement of said control element;

(e) means operatively connecting each of said pedals with said single control element for moving said element responsive to either independent or simultaneous movement of said foot pedals; and

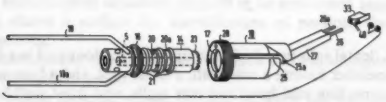
(f) an on-off switch associated with each foot pedal for switching on a utility supply responsive to movement of said foot pedals against said bias means.

4,354,839

DENTAL HANDPIECE

Werner Schuss, In der Lahrbach 18, 6148 Heppenheim, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,688
Claims priority, application European Pat. Off., Nov. 29, 1979, 79104768.1
Int. Cl.³ A61C *1/08, 17/02, 1/12*
U.S. Cl. 433—126 8 Claims



1. In a dental handpiece having a drive part with a drive shaft extending in a projection, a head part with a head housing containing socket means for supporting a tool for rotation and having a neck extending therefrom, and a grip part connected

to the head part and being removably supported on the projection of said drive part so that it can be axially removed therefrom, said grip part having a drive means for transmitting rotational motion from the drive shaft of the drive part to the socket means, said handpiece having at least one cooling agent line formed of sections in said parts with two of said cooling agent line sections being connected to one another by means of a rotatable connection consisting of an annular channel with annular sealing rings in one said parts, and an opening in the other of said parts in communication with said channel in said other part and being rotatable therearound, the improvements comprising a first drive shaft having means at one end to form a direct coupling with the drive shaft of the drive part and having two coaxially arranged gears of a different number of teeth disposed on the other end, said first drive shaft being supported for rotation in a first sleeve which forms one of the two parts of the rotatable connection and carries one of the coolant agent line sections, a second sleeve forming the other part of the rotatable connection being arranged concentrically on the first sleeve and having cooling line sections for conducting fluid from said connection to the head section, said first sleeve having first means coacting with the drive part for detachably connecting the first sleeve on the projection of said drive part without any rotation therebetween, said first sleeve and second sleeve having second means for releasably securing the second sleeve concentrically on the first sleeve for rotation thereon without any axial displacement, said grip part being formed by said first and second sleeves and an outer sleeve covering supported thereon; said sleeve covering having means for releasably receiving the neck of the housing of the head part, said neck having support means for supporting a second drive shaft in the neck, said second drive shaft having a gear at each end with the gear at one end engaged with a gear of the socket means, said support means for the second drive shaft supporting the second drive shaft with the gear at the other end engaged with one of said two coaxial gears of the first drive shaft section, so that by replacing the head part with another head part having its drive shaft supported with the gear at the other end engaged with the other of said coaxial gears, the gear ratio between the connection of the first drive shaft and the drive shaft of the head part can be changed.

4,354,840

SPLINTING DEVICE FOR ANTERIOR TEETH

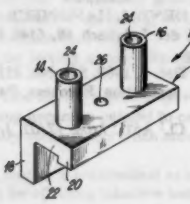
Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 70,247, Aug. 27, 1979, Pat. No. 4,260,383. This application Apr. 7, 1981, Ser. No. 251,774

The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.³ A61C *5/00*

U.S. Cl. 433—215 **22 Claims**



1. A dental splinting device comprising an elongated bar-like body member having a rear wall, a front wall, and a base wall interconnecting said front and rear walls, said front wall having a longitudinally extending portion shorter than said rear wall to thereby define a substantially J-shaped cross sectional configuration, at least one tubular member extending perpendicularly from said base wall for being received in a bore provided in a first tooth with said body member being disposed in a channel extending from the first tooth to at least one adjacent tooth, said tubular member including axial opening means extending therethrough for guiding a drill during formation of a pilot hole in the first tooth, the pilot hole functioning as a lead hole for the formation of said bore in the first tooth, and said body member including retaining means longitudinally spaced from said tubular member for securing said body member to the adjacent tooth when said body member is in a final position in the channel.

4,354,841

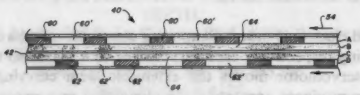
PRERECORDED INSTRUCTIONAL MATERIAL AND METHOD OF INSTRUCTION

Ernest P. Meeder, Glen Ellyn, Ill., assignor to C. F. Distributions, Inc., Glen Ellyn, Ill.

Filed Sep. 29, 1980, Ser. No. 191,835

Int. Cl.³ G09B *5/04*; G11B *5/02*

U.S. Cl. 434—157 **8 Claims**



1. A magnetic audio tape employable as a learning aid, said tape comprising:

a plurality of tracks extending longitudinally in a direction of advancement of the tape;

each of first and second tracks including longitudinally spaced prerecorded sections separated by intermediate sections;

said prerecorded sections of said first and second tracks being staggered with respect to each other in said direction of advancement, such that all of said prerecorded sections of said first track are entirely out of alignment with all of said prerecorded sections of said second track, taken transversely of said direction of advancement;

said prerecorded sections having thereon recorded sounds, the recorded sound of each section on said first track being related as a learning aid to the next succeeding recorded sound on said second track, taken in said direction of advancement; and

background sounds recorded along the entire length of at least a third said track being substantively related to the subject matter of said prerecorded sections so that the phrases of each section are associated with the background sounds, and thus with each other, by a listener, so as to enhance the learning effect and interest of the listener.

4,354,842

SYSTEM FOR UTILIZING INTERACTIVE BLOCKS TO TEACH ARITHMETIC

Deborah Stoddard; Blair F. Baldwin, both of New York, N.Y., and Donald Gorgas, Long Valley, N.J., assignors to Baldwin, Stoddard & Co., New York, N.Y.

Filed May 28, 1981, Ser. No. 267,682

Int. Cl.³ G09B *19/02*

U.S. Cl. 434—195 **15 Claims**

1. A system for utilizing interactive blocks to teach arithmetic, comprising:

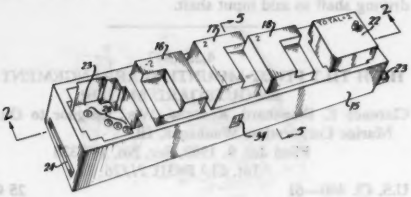
a base member having a longitudinal passage therein and a plurality of recesses communicating with said passage, each recess extending to a surface of said base member,

a summary rack mounted for longitudinal movement in said passage;

cam means disposed in selected ones of said recesses for causing incremental movement of said summing rack in response to insertion of an arithmetic value block into the corresponding recess, the amplitude of said movement

being proportional to a given dimension of an actuating portion of said block associated with the arithmetic value thereof;

indexing means operatively associated with said summing rack and having a series of index elements adjacent a predetermined one of said recesses, said index elements establishing a pattern in said recess uniquely corresponding to the longitudinal position of said summing rack in said passage, for enabling said predetermined recess to



receive only an answer block having index element engaging means disposed in a pattern corresponding to an arithmetic value defining the longitudinal position of said summing rack;

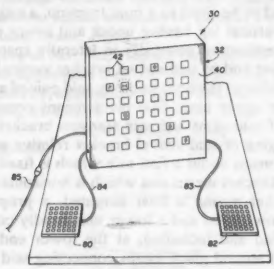
whereby when one or more arithmetic value blocks are inserted in the corresponding recesses, said predetermined recess is rendered capable of receiving only an answer block having an associated arithmetic value equal to the arithmetic combination of the values associated with said arithmetic value blocks.

4,354,843

SPACIAL ORIENTATION INSTRUCTION DEVICE

Brian Feldman, 338 E. 22nd St., Apt. 2C, New York, N.Y. 10010

Filed May 4, 1979, Ser. No. 36,183
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—236 **1 Claim**



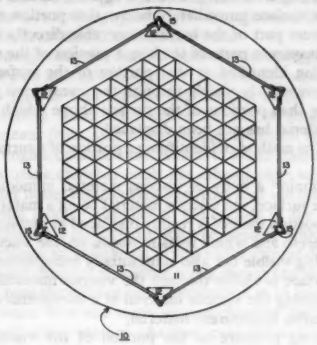
1. The method of providing spacial orientation instruction to a student comprising the steps of displaying to said student a plurality of display windows in an intersecting pattern of horizontally and vertically oriented rows so as to define a display location at each said intersection of said rows, successively illuminating a display window at only one said display location at a time so as to provide a corresponding single-light display to said student, and providing for actuation by said student plural buttons operatively arranged in said same pattern of horizontal and vertical rows at said display locations, each said button having a controlling operative relation over a cooperating display window having the same location in said pattern effective to terminate the illumination thereat incident to being actuated, whereby said student in the process of selecting an illumination-terminating button requires recognition of the spacial orientation of the location of said one display window selected for illumination.

4,354,844

BEHAVIORAL AND PSYCHOLOGICAL TEST INSTRUMENT

William J. Ickinger, 254 Terrace Ave., Apt. C-2, West Haven, Conn. 06516

Filed Oct. 23, 1980, Ser. No. 199,737
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—237 **18 Claims**



1. A test chamber for observing and statistically evaluating human behavior comprising

A. moveable wall member means positionable to peripherally surround and define a test chamber of any desired size and shape in any desired location;

B. a test zone located within the wall members and defined by a specific pattern displayed on the floor of the chamber; and

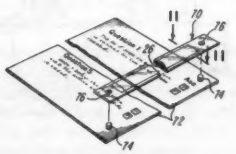
C. a test zone floor pattern comprising a plurality of indicia, with each indicia being in spaced relationship to adjacent indicia to provide a test subject with the plurality of alternate directions in which to move each time a move is required.

4,354,845

IDENTIFICATION STRUCTURE FOR GAMES AND EDUCATIONAL USE AND FOR OTHER USE

Ronald J. Poteet, and Anne P. Poteet, both of 4377 Tangent Dr., Dayton, Ohio 45440

Filed Nov. 24, 1980, Ser. No. 210,016
Int. Cl.³ A63F *3/06, 9/18*; G09F *19/00*
U.S. Cl. 434—410 **12 Claims**



1. Identification structure adapted to be positioned immediately above a surface for identification of portions thereof comprising:

a substantially flat bag having opposed flexible substantially transparent parts,

a viscous material within the bag between the transparent parts, the viscous material being visible within the bag but being sufficiently transparent that the surface is visible through the transparent parts of the bag and through the viscous material, the viscosity of the viscous material being such that a portion of the viscous material may be

readily displaced within the bag as a result of the application of pressure upon a part of the bag, the viscosity of the viscous material being such that a portion of the viscous material which is displaced remains displaced, displacement of such portion of the viscous material by application of pressure upon a portion of a transparent part of the bag displacing and removing substantially all the viscous material from below the portion of the transparent part of the bag to which pressure is applied, so that a portion of the surface immediately below that portion of the transparent part of the bag is observable directly through the transparent parts of the bag, a portion of the surface thus being identified as that portion of the surface which is more clearly visible through the transparent parts of the bag than portions of the surface above which the viscous material has not been displaced.

12. The method of identifying a portion of a surface comprising:

positioning a body of viscous material immediately above the surface, the viscous material being a material in which a portion thereof is readily displaced as pressure is applied thereto and which remains displaced, the viscous material being visible but also substantially transparent so that the surface is visible through the viscous material,

containing the viscous material in a substantially flat bag of flexible transparent material,

applying pressure to the portion of the viscous material which is immediately above a portion of the surface to be identified so that the portion of the viscous material which is immediately above said portion of the surface is displaced and remains displaced until smoothing pressure is applied generally to the body of viscous material.

4,354,846

NONSTEERABLE DRIVE MECHANISM FOR A WATERCRAFT

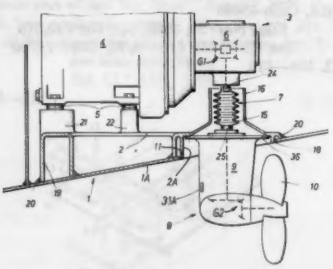
Johann Eichinger, Vaterstetten, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 9,226, Feb. 2, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 249,291

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805688

Int. Cl.³ B63H *21/28*

U.S. Cl. 440—52 **10 Claims**



1. In a drive mechanism for a watercraft having an opening through a hull, said drive mechanism comprising an upper part which is arranged within said watercraft and a lower part which is arranged outside of said watercraft and having an input shaft, and drive means including a downwardly directed driving shaft and an angled gear arranged in said lower part, said lower part having a driven shaft extending substantially horizontally below the waterline and a propeller fixedly secured to an end of said driven shaft, the improvement comprising a base plate means on the interior of said hull, said base plate means including means thereon encircling said opening, resilient mounting means for resiliently mounting said upper part to said base plate means, a closure member for sealingly closing said opening, said closure member being sealingly, fixedly secured by connecting means to the outside of said base plate means so that it can be removed from said base plate means without necessitating a removal of said upper part from said base plate means and, similarly, said upper part can be removed from said base plate means without necessitating a removal of said lower part, rigid mounting means for rigidly mounting said lower part to said closure member, said input shaft sealingly extending through said closure member into the interior of said hull, and an elastic coupling connecting said driving shaft to said input shaft.

4,354,847

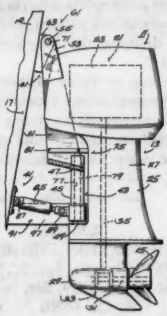
HIGH TILT PIVOT MOUNTING ARRANGEMENT FOR AN OUTBOARD MOTOR

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 9, 1980, Ser. No. 167,338

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—61 **25 Claims**



1. A marine propulsion device comprising transom bracket means adapted to be fixed to a boat transom, a swivel bracket including a vertical leg having upper and lower ends, and a pair of arms extending upwardly in laterally spaced relation from said upper end of said swivel bracket vertical leg and in rearward relation to the boat transom, said pair of arms including respective upper ends, first pivot means connecting said upper ends of said arms and said transom bracket means for vertical swinging of said swivel bracket relative to said transom bracket means about a first axis which is fixed relative to said transom bracket means and which is horizontal when said transom bracket means is boat mounted, a propulsion unit including a powerhead and a lower unit fixedly connected to said powerhead and including, at the lower end thereof, a propeller, and second pivot means connecting said propulsion unit and said swivel bracket vertical leg for movement of said propulsion unit in common with said swivel bracket about said first axis and for steering movement of said propulsion unit relative to said swivel bracket about an axis which extends transversely to said first axis.

4,354,848

OUTBOARD MOTOR WITH TILT LINKAGE INCLUDING PIVOT LINK

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

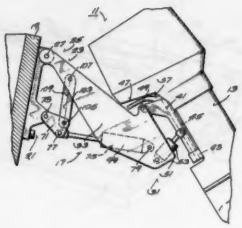
Filed Jul. 28, 1980, Ser. No. 173,159

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—61 **14 Claims**

1. An outboard motor comprising a transom bracket means adapted to be fixedly mounted to a boat transom, second bracket means, means connecting said second bracket means to

said transom bracket means for pivotal movement of said second bracket means in a vertical plane about a first axis which is horizontal when said transom bracket means is boat mounted, a pivot link, means pivotally connecting said pivot link to said transom bracket means for pivotal movement about a second axis parallel to said first axis, an extensible link having opposite ends, means pivotally connecting one of said opposite ends of said extensible link to said pivot link about a third axis parallel to said first axis, means pivotally connecting the other of said opposite ends of said extensible link to said second



bracket means about a fourth axis parallel to said first axis, means including a member connected to said pivot link and operable, in response to extension of said extensible link, for pivoting said pivot link so as to additionally increase the distance from said second axis to said fourth axis, a propulsion unit including a propeller, and means connecting said propulsion unit to said second bracket means for pivotal steering movement of said propulsion unit in a horizontal plane relative to said second bracket means and independently of said member.

4,354,849

EXHAUST GAS DISCHARGE AND COOLING MEANS FOR OUTBOARD ENGINES

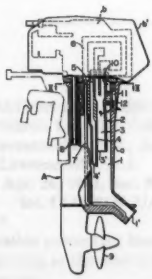
Yasumaru Sanmi; Norimichi Harada, and Yasuhiro Nishida, all of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 841,585, Oct. 12, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,156

Claims priority, application Japan, Oct. 13, 1976, 51-138054; Oct. 13, 1976, 51-138055

Int. Cl.³ B63H *23/32*

U.S. Cl. 440—88 **12 Claims**



1. In combination: a casing adapted to mount an outboard internal combustion engine, said casing forming an internal discharge chamber with an opening at its top end, and a discharge passage having a discharge port near is lower end;

an exhaust pipe in said discharge chamber having its inlet near the said top end and its outlet in said discharge chamber, said exhaust pipe being adapted to be connected to an exhaust port of said engine;

a cooling water discharge pipe having its inlet connected to the outlet of a cooling system for said engine and its outlet in said internal discharge chamber; and

a water storage chamber formed between the casing and the exhaust pipe and extending fully peripherally around the exhaust pipe in heat transfer relationship to the exhaust pipe, cooling water inlet means to, and cooling water outlet means from, said water storage chamber, whereby during engine operation circulation of water through said water storage chamber cools the exhaust pipe; said cooling water outlet means extending from near the bottom of said water storage chamber to the outside of the casing, and including a restricted discharge passage which is so proportioned as to maintain in said water storage chamber a sufficient quantity of cooling water during engine operation to keep the exhaust pipe temperature at an acceptable value, water from said water storage chamber discharging from said water storage chamber only through said restricted discharge passage.

4,354,850

GEAR CLUTCH

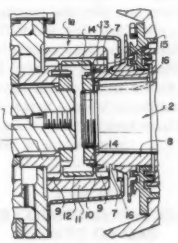
Ernst Piepenbreier, Essen, and Hansjochen Girod, Mülheim, both of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,972

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947389

Int. Cl.³ F16D *9/00*

U.S. Cl. 464—32 **3 Claims**



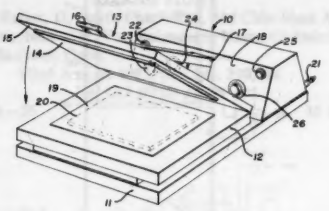
1. A gear clutch comprising, an annular clutch casing with a plurality of internal teeth, a clutch hub having a plurality of external teeth meshed with said internal teeth, said clutch hub being coaxial with said clutch casing, said external teeth having a load bearing part and a root, said clutch hub having an annular axially extending groove extending into said root from one side of said external teeth and ending below said external teeth and an annular radially extending groove on an opposite side of said external teeth and defining with said axially extending groove a cylindrical annular break section of a size smaller than that of said load bearing part, whereby said break section breaks before said load bearing part breaks when the gear clutch is overloaded.

4,354,851

METHOD FOR MAKING A DECORATED, WATER-RESISTANT, RIGID PANEL AND THE PRODUCT MADE THEREBY: TRANSFER DYE PROCESS ONTO RIGID PANEL

Daniel H. Hix, Pittsburg, Kans., and Daniel D. Closser, Port Washington, Wis., assignors to United States Gypsum Company, Chicago, Ill.

Filed Feb. 17, 1977, Ser. No. 769,753
Int. Cl.³ D06P *1/76*
U.S. Cl. 8—471 9 Claims



1. A method for making a decorated, water-resistant, rigid panel which is a cured, pre-coated rigid panel having a clear, water-resistant, polymeric top coating on one surface of the panel and at least one substrate polymeric coating under the clear, polymeric top coating with the substrate coating adjacent to the clear top coating containing a colored pigment and a polymeric binder which comprises (1) bringing said cured, pre-coated rigid panel into contact with a printed transfer sheet having a decoration formed by a sublimable coloring agent, (2) placing the side of the transfer sheet containing the coloring agent in direct contact with the clear top coating on the panel, (3) applying light pressure ranging from about 1 to about 50 psi to the transfer sheet and rigid panel to mantain intimate contact between their surfaces, (4) applying heat to the surfaces of the transfer sheet and rigid panel for a short period of time ranging from about 10 seconds to about 3 minutes whereby the temperature at the transfer sheet surface ranges from about 150° C. to about 220° C. which causes the coloring agent to sublime and penetrate into the polymeric top coating on the panel, (5) removing the heat and pressure from the transfer sheet and rigid panel surfaces, and (6) recovering a decorated, water resistant, rigid panel after readily stripping the transfer sheet from the coated surface of the rigid panel.

4,354,852

PHASE SEPARATION OF HYDROCARBON LIQUIDS USING LIQUID VORTEX

Paul H. Kydd, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

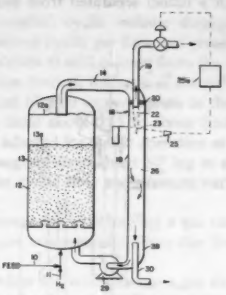
Filed Apr. 24, 1981, Ser. No. 257,435
Int. Cl.³ G01N *23/00*
U.S. Cl. 23—230 A 8 Claims

1. A phase separation process for heavy hydrocarbon liquids containing a gas portion at elevated temperature and pressure conditions, comprising:

(a) introducing the liquid-gas mixture into a separation zone containing at least one flow passageway oriented to produce a swirling vortex flow pattern;

(b) passing the mixture through the flow passageway and forming a vortex flow pattern within the separation zone, with said vortex having an inner gas core portion;

(c) monitoring location of the downstream end of the vortex gas core, and withdrawing a gas stream from within the vortex core at a rate sufficient to maintain said gas core downstream end within a desired location range; and



(d) withdrawing the swirling liquid portion downstream from the vortex and passing it to further processing.

4,354,853

KARL FISCHER REAGENT AND ITS USE

Harald Dahms, 472 Madison Ave., Toms River, N.J. 08753

Filed May 11, 1981, Ser. No. 262,173
Int. Cl.³ G01N *31/16, 33/18*
U.S. Cl. 23—230 R 17 Claims

1. A method for determining water by a Karl Fischer type reaction, including the titration of a vessel solution containing a water sample with a halogen-containing titrant, including the steps of:

combining said water containing sample and a vessel solution including a reducing substance and a first solvent for said reducing substance, said solvent having a high solubility for water,

adding a titrant to said vessel solution-water sample combination, said titrant including a halogen and a second solvent for said halogen wherein said second solvent is different than said first solvent, has a very low solubility for water, and includes as said second solvent at least a substance selected from the group consisting of xylene, toluene, and mixtures thereof, said titrant reacting with said vessel solution-water sample combination on a stoichiometric basis, the amount of titrant used being related to the amount of water in said sample.

4,354,854

APPARATUS FOR COLORIMETRICALLY MEASURING TRACES OF GAS

Ulrich Fritze; Gerd Janser, both of Cologne; Heinz Herschinger, Leverkusen, and Dieter Kitzelmann, Bonn, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,804
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024847
Int. Cl.³ G01N *31/06, 31/20*
U.S. Cl. 23—232 R 11 Claims

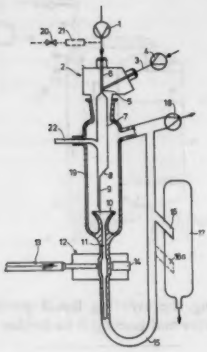
5. In a method for the colorimetric measuring of traces of gas wherein the gas to be measured is absorbed in a reaction liquid and enters into a color reaction, the improvement comprising the steps of:

absorbing a gas in a reaction liquid by atomizing the liquid with the gas;

passing the liquid and absorbed gas downwardly through a separation pipe as a thin film on the wall thereof;

communicating the thin film downwardly from the pipe into a micro-flow cuvette while stabilizing the flow of the reaction liquid with the absorbed gas through the cuvette by

passing the reaction liquid and absorbed gas from the pipe along a thin hydrophilic rod-like liquid guide, thereafter through a funnel separated from said guide and then



into the cuvette, siphoning off the reaction liquid with the absorbed gas from the outlet of the cuvette and outletting the siphoned off liquid above the level of the cuvette.

4,354,855

MOTOR FUEL

W. Alan Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 30, 1980, Ser. No. 155,029

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—56 **5 Claims**

1. A motor fuel comprising a major portion of gasoline-boiling-range compounds and from 0.1 to 49 volume percent t-butyl t-butoxyacetate, said motor fuel containing gasoline.

4,354,856

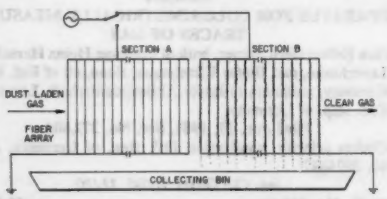
METHOD AND APPARATUS FOR RECOVERING MAGNETIC PARTICLES

Robert T. Lewis, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 26, 1981, Ser. No. 228,654

Int. Cl.³ B03C *1/00*

U.S. Cl. 55—3 **18 Claims**



1. A method for recovering magnetic paticles from a fluid comprising

(a) contacting said fluid with a ferromagnetic element to cause the attraction and collection of magnetic particles from said fluid;

(b) heating said ferromagnetic element to a temperature near or above the Curie temperature of at least one of (1) the ferromagnetic element and (2) collected magnetic particles; and

(c) disengaging collected magnetic particles from said ferromagnetic element.

4,354,857

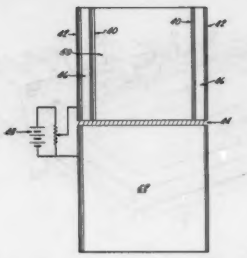
METHOD AND APPARATUS FOR SEPARATING GAS MOLECULES USING A BIPOLAR MEMBRANE AS A MOLECULAR SIEVE

Howard Reiss, La Jolla, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 974,158, Dec. 28, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,487

Int. Cl.³ B01D *53/22*

U.S. Cl. 55—6 **15 Claims**



5. A process for separating one type of gaseous molecules from a mixture of different types of gaseous molecules comprising the steps of: applying a mixture of different types of gaseous molecules to one side of a porous bipolar membrane having a pore size distribution dependent upon an applied electric field, wetting both sides of the porous bipolar membrane with a liquid medium, applying an electric field across the porous bipolar membrane, and adjusting the electric field to a level causing the pore size distribution of the porous bipolar membrane to pass one type of molecule and to block the passage of other types of molecules in said mixture of different types of molecules, the passage of one type of molecule through the porous bipolar membrane being by diffusion.

4,354,858

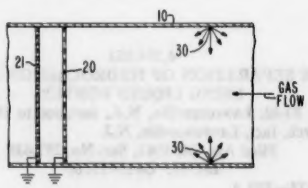
METHOD FOR FILTERING PARTICULATES

Tribhawan Kumar, Oakland, Calif., and Kris E. Wolpert, Harrisburg, Pa., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 172,326, Jul. 25, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,614

Int. Cl.³ B01D *53/00*

U.S. Cl. 55—6 **6 Claims**



1. An improved method for filtering particulates from a stream of particulate-laden gas comprising the steps of:

(a) moving the gas including the particulates to be filtered as a stream;

(b) imparting electrostatic charges to the particulates in the stream;

(c) positioning across the path of the stream and downstream of the location at which the electrostatic charges are imparted to the particulates therein a metallic electrically grounded foraminous collecting structure having aper-

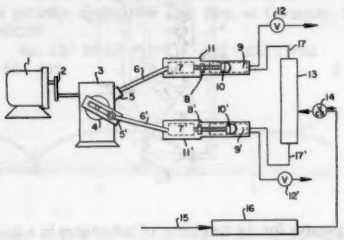
tures of sizes larger than the average size of particulates to be filtered from the stream by more than an order of magnitude,

(d) directing the gas stream containing the charged particulates through said collecting structure such that the electrostatically charged particulates are quickly accumulated as a porous filter cake by said collecting structure and are filtered from the gas stream.

4,354,859
ENHANCED GAS SEPARATION BY SELECTIVE ADSORPTION

George E. Keller, II, South Charleston, and Chia-Huei A. Kuo, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 6, 1981, Ser. No. 290,484
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—25 19 Claims



1. An improved pressure swing adsorption process for separating a more readily adsorbable gas component(s) from less readily adsorbable gas component(s) of a gas mixture comprising:

(a) introducing said gas mixture to an adsorption column, containing an adsorbent capable of selectively adsorbing the more readily adsorbable gas component(s) of said gas mixture, at a point between the opposite ends of the column;

(b) imposing cyclic gas flow and pressure variations on the gas mixture in said column from a first end thereof by a first, larger, cyclic volume displacement means;

(c) imposing cyclic gas flow and pressure variations on the gas mixture in said column at the same time from the second end thereof by a second, smaller, cyclic volume displacement means, the ratio of the volume displacement produced by said second means to that of said first means being from about 0.15 to about 0.65, the second means imposing said cyclic flow and pressure variations relative to the flow and pressure variations of said first means at a phase angle within the range of from about 30° lag to about 90° lead;

(d) withdrawing a gas stream enriched in one said gas component from the first end of the column; and

(e) withdrawing a gas stream enriched in the other said gas component(s) from the second end of the column, whereby the gas mixture passes rapidly back-and-forth within said column, achieving an enhanced separation of the gas mixture and production of the desired product.

13. An improved apparatus for the pressure swing adsorption separation of a more readily adsorbable gas component(s) from a less readily adsorbable gas component(s) of a gas mixture comprising:

(a) an adsorption column containing an adsorbent capable of selectively adsorbing the more readily adsorbable gas components from less readily adsorbable gas components of a gas mixture;

(b) inlet means for introducing said gas mixture to the adsorption column at an injection point intermediate between the opposite ends of the column;

(c) a first, larger, cyclic volume displacement means adapted to impose cyclic gas flow and pressure variations on the gas mixture in said column from a first end portion thereof;

(d) a second, smaller, cyclic volume displacement means adapted to impose cyclic gas flow and pressure variations on the gas mixture in said column from the second, opposite end portion thereof, the ratio of the volume displacement produced by said second means to that of said first means being from about 0.15 to about 0.65, said second means being adapted for cyclic operation at a phase angle within the range of from about 30° lag to about 90° lead relative to the cyclic flow and pressure variations of said first means;

(e) discharge means for withdrawing a gas stream enriched in one said gas component(s) from the first end of the column; and

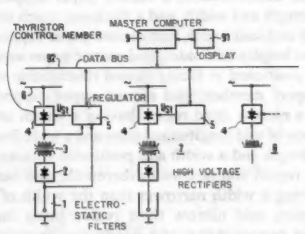
(f) discharge means for withdrawing a gas stream enriched in the other said gas component(s) from the second end of the column,

whereby the cyclic volume displacement means having the indicated relative volume displacements and phase angles cause a gas mixture introduced to the column to pass rapidly back-and-forth within said column, achieving an enhanced separation of the gas mixture and production of the desired product.

4,354,860
METHOD FOR DETERMINING THE FILTER CURRENT LIMIT OF AN ELECTROSTATIC FILTER

Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,620
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949786
Int. Cl.³ B03C *3/68*
U.S. Cl. 55—105 5 Claims



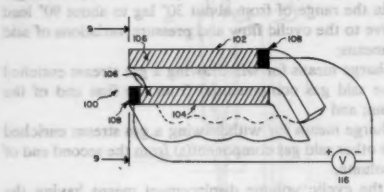
1. In a method for determining the filter current limit of an electrostatic filter which is fed from an alternating current source via a control element and in which the control voltage of the control element can be varied up to a given filter current limit as a function of filter operating data, the improvement comprising, during the operation of the filter, at given intervals of time, varying the control voltage in given steps to a minimum and then again to its original value, while at the same time continuously calculating the ratios of change of filter voltage to change of control voltage and change of filter voltage to change of filter current and, if given limit values of these ratios are not reached, or if there is a sign change of two successive ratio values using the respective associated filter current to determine the filter current limit.

4,354,861

PARTICLE COLLECTOR AND METHOD OF MANUFACTURING SAME

Charles G. Kalt, 29 Hawthorne Rd., Williamstown, Mass. 01267

Filed Mar. 26, 1981, Ser. No. 227,576
Int. Cl.³ B03C 3/04, 3/45
U.S. Cl. 55—130 4 Claims



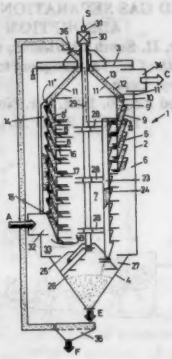
4. An electrostatic particle collector, comprising a first paper support member having a length and width, and a thickness much smaller than said length and said width, said first paper support member having two longitudinal sides, said first paper support member including a narrow first region, said narrow first region having a length and a width and being positioned adjacent one of said longitudinal sides and opposite the other of said longitudinal sides, and a wide second region having a length and a width and positioned adjacent said narrow first region and in contact therewith, said narrow first region having a width narrower than the width of said wide second region, said narrow first region being impregnated with a first concentration of a conductive material and said wide second region being impregnated with a second concentration of a conductive material, said first concentration containing a higher concentration of said conductive material than does said second concentration, a second paper support member having a length and width, and a thickness much smaller than said length and said width, said second paper support member having two longitudinal sides, said second paper support member being positioned in facing spaced relationship to said first paper support member, said second paper support member including a narrow third region having a length and a width adjacent one of said longitudinal sides and a wide fourth region having a length and a width and positioned adjacent said narrow third region and in contact therewith, said narrow third region having a width narrower than the width of said wide fourth region, said narrow third region being impregnated with a first concentration of a conductive material and said wide fourth region being impregnated with a second concentration of a conductive material, said first concentration containing a higher concentration of said conductive material than does said second concentration, said second paper support member being positioned with its wide fourth region in facing spaced relationship to said wide second region of said first paper support member to define a passage therebetween, said second paper support member being further positioned, configured and dimensioned to lie adjacent said first paper support member with said narrow third region adjacent said other longitudinal side of said first paper support member opposite said narrow first region of said first paper support member, voltage means coupled to said first region and said third region for applying a voltage potential difference between said first and said second paper support members.

4,354,862

FILTER FOR CLEANING GASES

Friedrich Sgaslik, Regensburg, Fed. Rep. of Germany, assignor to Andre Büechl Kalk-und Portandzementwerk, Regensburg, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,885
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002773
Int. Cl.³ B01D 46/04
U.S. Cl. 55—296 17 Claims



1. Apparatus for the treatment of substances in a gas stream comprising:

(a) a casing;

(b) a plurality of annular cells concentrically arranged with respect to a common vertical axis one above the other in said casing, a bottom portion of each cell, except the lowermost, extending into the cell situated thereunder;

(c) an inner gas chamber formed by an area of the interior of the casing, which area is surrounded by said plurality of annular cells, and an outer gas chamber formed by an area of the interior of the casing, which area surrounds said plurality of cells, said inner chamber having gas inlet means and said outer chamber having a gas outlet means;

(d) a medium inlet means disposed at the top of said casing and channel means for channeling medium to each said cell from said medium inlet;

(e) each said annular cell comprising:

(i) inner and outer annular wall means;

(ii) said inner annular wall means and said outer annular wall means of each cell separating each cell from said inner and outer gas chambers respectively;

(iii) an opening in the bottom portion for communication with the annular cell situated thereunder;

(iv) a cell medium inlet means for receiving medium from said channel means;

(v) an annular opening at a lower part of said inner wall means defining a gas inlet and medium outlet from each cell;

(vi) said cell having an upper gas outlet at an upper portion thereof for outlet of gas therefrom;

(vii) a substantially horizontally disposed ring wall means having an inner edge and being disposed adjacent and below said annular opening and extending into the interior of said inner gas chamber, an upper surface of said substantially horizontally disposed ring wall means being adapted to support thereon a talus of medium discharged from said cell through said annular opening; and

(viii) the annular opening of each cell, except for the lowermost cell, being situated below the upper gas outlet of the cell situated thereunder;

(f) a plurality of sweeping means in said inner gas chamber, said sweeping means being mounted for rotation about a

common vertical axis, at least one of said sweeping means being located at each annular opening and disposed above said upper surface; and

(g) a plurality of collection pockets in said inner gas chamber, said pockets being mounted for rotation about said common vertical axis, each of said pockets being located below one of said sweeping means and below one of said horizontally disposed ring wall means, said sweeping means being operable when rotated, to move across said upper surface of said horizontally disposed ring well means and is operative for sweeping medium deposited on said horizontally disposed ring wall means across an inner edge of the ring wall means into said pockets.

4,354,863

FALSE CEILING

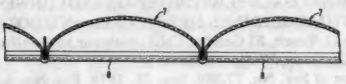
Johann Oleszak, Schleiermacherstrasse 25, D-4630 Bochum 6, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,428

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949235

Int. Cl.³ B01D *45/08, 53/00;* **F23J** *11/02*

U.S. Cl. 55—436 **3 Claims**



1. A false ceiling for use in removing and/or dissipating contaminants including condensible contaminants in a room comprising:

a. a plurality of ceiling panels of arcuate configuration, the concave surfaces of which are directed downwardly, each of said panels being substantially defined by a pair of spaced apart substantially parallel lower and upper walls which define a substantially unobstructed continuous open passage in each of said panels, each of said lower and upper walls having spaced openings therein to permit the flow of air in said passages, said openings having flanges therearound which extend inwardly in the respective panels thereof, the openings in one of said walls being in staggered relation to the openings in the other of said walls, whereby air passing through said panels is deviated in its flow in said passages and contaminants from said air condensing on the inner surfaces of said walls gravitate downwardly in substantially continuous flow through said passages and are prevented from passing through the openings in said lower walls by said flanges;

b. a plurality of collecting channels adjacent the lower edges of said panels in communication with the respective passages thereof for receiving said condensed contaminants for disposition thereof; and

c. a plurality of support members for supporting said panels at the corners thereof and for detachably supporting said channels to permit the removal thereof for cleaning.

4,354,864

PROCESS FOR PRODUCTION OF LAYERED GLASS BATCH PELLETS

Walter C. Saeman, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 123,153, Feb. 21, 1980, Pat. No. 4,293,324. This application Feb. 25, 1981, Ser. No. 238,256

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.³ C03B *1/00;* **C03C** *1/02*

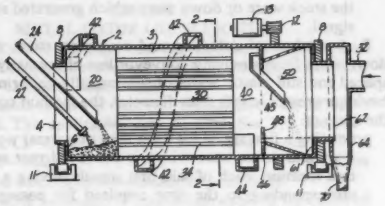
U.S. Cl. 65—27 **10 Claims**

1. A continuous process for the production of layered pellets for glass production, which comprises the following steps:

(a) maintaining in a pelletizing zone of a rotary apparatus a moving bed of recycle pellets,

(b) feeding sand and particles of a calcium carbonate source into said pelletizing zone,

(c) feeding a Na_2O source comprised of a solution of sodium hydroxide into said pelletizing zone, said recycle pellets being coated with a layer comprised of said solution of sodium hydroxide, said sand and said calcium carbonate source and forming layered pellets,



(d) passing said layered pellets into a heated drying zone to form dried layered pellets, said dried layered pellets having a residual moisture content of from about 4 to about 12 percent by weight,

(e) passing said dried layered pellets from the drying zone to a recycle zone,

(f) recycling a portion of said dried layered pellets to said pelletizing zone as said recycle pellets, and

(g) recovering a portion of said dried layered pellets from said recycle zone.

4,354,865

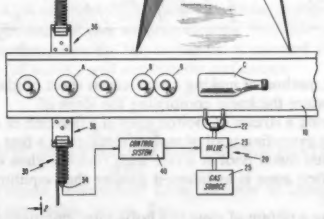
AUTOMATIC GLASS WARE FORMING MACHINE WITH AUTOMATIC DOWN AND/OR STUCK BOTTLE REJECTION

William J. Poad, Brockport; Urbano J. DeSantis, and Lewis W. McFadden, both of Brockway, all of Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed May 1, 1981, Ser. No. 259,568

Int. Cl.³ C03B *35/00*

U.S. Cl. 65—29 **6 Claims**



1. The combination, an automatic glass were forming machine comprising a conveyor on which a single line of normally upright, still plastic wares of substantially uniform size and having a greater length than diameter are transported for further processing in spaced relationship with respect to each other, and automatic stuck and down ware rejection apparatus comprising:

detecting means for sensing the passage of normal ware, stuck ware and down ware past an inspection location and for producing a first signal for each item of sensed normal ware, stuck ware and down ware having a duration corre-

sponding to the time required for the corresponding sensed item to be conveyed past said inspection location;

means responsive to each of said first signals for producing a second signal having a predetermined duration corresponding to the time required for a normal upright and spaced ware to be conveyed past said inspection location;

means responsive to each of said first and second signals for producing a reject signal when said first signal exceeds said second signal in duration, which corresponds to the detection of stuck ware or down ware; and

removal means responsive to said reject signal for removing the stuck ware or down ware which generated said reject signal.

5. A method of detecting and removing stuck ware and down ware from a moving conveyor line of normally upright, spaced and still plastic wares of substantially uniform size and having a greater length than diameter, the method comprising the steps of:

producing a first signal for each item of normal ware, stuck ware and down ware which is conveyed past an inspection location, each of said first signals having a duration corresponding to the time required for passage of the corresponding item past said inspection location,

producing a second signal simultaneously with the production of each of said first signals, said second signals having a predetermined duration corresponding to the time required for a normal upright and spaced item of ware to be conveyed past said inspection location;

inhibiting the generation of a reject signal during the duration of each of said second signals and generating said reject signal if a first signal is present after the termination of the corresponding second signal; and

actuating signal responsive automatic ware removal means in response to said reject signal.

4,354,866

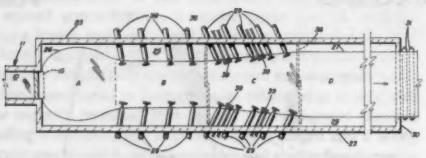
METHOD OF BIDIRECTIONALLY ATTENUATING GLASS IN A FLOAT PROCESS WITH EDGE COOLING

Raymond J. Mouly, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 137,329, Apr. 4, 1980, Pat. No. 4,305,745. This application Oct. 2, 1981, Ser. No. 307,815

Int. Cl.³ C03B *18/06*

U.S. Cl. 65—99.5 **12 Claims**



1. A method of making a continuous sheet of glass of below equilibrium thickness comprising the steps of:

delivering a stream of molten glass at a first end of a longitudinally extending pool of molten metal onto a first zone of the molten metal pool at a rate such that the glass thickness in the first zone is maintained greater than equilibrium thickness;

drawing a ribbon of glass in a horizontal longitudinal direction from the first zone onto a second zone of the molten metal pool and stretching the ribbon in the second zone in a longitudinal direction while being restrained against shrinkage in the transverse direction so that substantial reduction of the glass thickness to a thickness below equilibrium is effected in the second zone, and deviations from surface flatness of the ribbon are drawn into elongated distortions extending substantially longitudinally;

further drawing the ribbon of glass in the longitudinal direction from the second zone onto a third zone of the molten metal pool, cooling marginal edge portions of the ribbon below the temperature of adjacent center portions of the ribbon, engaging the cooled marginal edge portions with attenuating means, and stretching the ribbon by said attenuating means in the third zone in the transverse direction so that additional reduction of glass thickness is effected, and the longitudinally extending surface distortions are stretched in the transverse direction, thereby reducing their spatial frequencies;

further drawing the ribbon of glass in the longitudinal direction from the third zone onto a fourth zone and cooling the glass in the fourth zone sufficiently to be dimensionally stable; and

withdrawing the dimensionally glass ribbon of less than equilibrium thickness from a second end of the pool of molten metal, whereby a ribbon of glass is produced in which light transmitted through the glass is affected by optical distortion of reduced optical power.

4,354,867

3-PERHALOALKYLHYDROXY-OXAXOLIDINES AND THIAZOLIDINES HERBICIDAL ANTIDOTES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

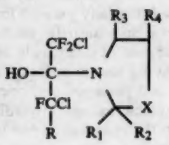
Division of Ser. No. 77,889, Sep. 21, 1979, Pat. No. 4,259,500. This application Sep. 26, 1980, Ser. No. 191,218

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—88 **15 Claims**

1. A composition comprised of

(a) an antidotally effective amount of a compound of the formula



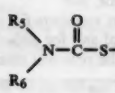
in which

R is selected from the group consisting of chloro and fluoro;

R_1–R_4 are each independently selected from the group consisting of hydrogen and 1–4 carbon alkyl; and

X is oxygen; and

(b) an herbicidally effective amount of a thiocarbamate of the formula



in which

R_5 is selected from the group consisting of 1–6 carbon alkyl and 2–6 carbon alkenyl;

R_6 is selected from the group consisting of 1–6 carbon alkyl, 2–6 carbon alkenyl, cyclohexyl and phenyl; or

R_5 and R_6 together form a hexamethylene group; and

R_7 is selected from the group consisting of 1–6 carbon alkyl, 1–6 carbon haloalkyl, 5–10 carbon alkylene ring, phenyl, substituted phenyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo, benzyl and substituted benzyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo.

4,354,868

PROCESS FOR THE DESILICONIZATION OF MANGANESE ALLOYS

Michel Demange, and Louis Septier, both of Le Fayet, France, assignors to Societe Francaise d'Electrometallurgie-SOFREM, Paris, France

PCT No. PCT/FR79/00123, § 371 Date Aug. 11, 1980, § 102(e) Date Aug. 11, 1980, PCT Pub. No. WO80/01170, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 202,446

Claims priority, application France, Dec. 11, 1978, 78 35300

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.[3] C22B *47/00*

U.S. Cl. 75—60 13 Claims

1. A process for desiliconization of manganese base alloys containing silicon characterized by injection into said alloy which is liquid and disposed in a reactor, an amount of carbon dioxide which is from about 1 to about 3 times the stoichiometric amount which permits oxidation of silicon in accordance with the reaction: $Si+2CO_2 \rightarrow SiO_2+2CO$, thereby removing silicon and affecting an alloy having a very low silicon content.

4,354,869

PROCESS FOR PURGING ALUMINUM AND ALUMINUM ALLOY MELTS OF SMALL QUANTITIES OF ALKALI AND ALKALINE EARTH METALS

Roland Hummer; Joseph Reinisch, and Wolfgang A. Thury, all of Leoben, Austria, assignors to Metals & Alloys Company Limited, Canada

Filed May 19, 1981, Ser. No. 265,172

Claims priority, application Austria, May 27, 1980, 2793/80

Int. Cl.[3] C22B *21/06*

U.S. Cl. 75—63 11 Claims

1. Process for the removal of small quantities of an impurity selected from the group consisting of alkali metals, alkaline earth metals, and mixtures thereof, from an aluminum or aluminum alloy melt, comprising introducing into the melt at a temperature not substantially in excess of about 700° C. a source of sulfur other than sulfurhexafluoride substantially free from any content of metal ion, permitting the sulfur to react with said small quantities of impurity to form an impurity-containing slag, purging the melt with a gas in quantities sufficient to remove residual sulfur remaining in the melt, and separating the purified melt from the impurity-containing slag.

4,354,870

METALS BENEFICIATION PROCESS

Theodore P. Goldstein, Yardley, Pa., and Louis D. Rollmann, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 225,158, Jan. 15, 1981, abandoned. This application Oct. 15, 1981, Ser. No. 311,581

Int. Cl.[3] C22B *3/00, 11/04;* C01F *7/28*

U.S. Cl. 75—108 6 Claims

1. A process for recovering a clay from an aqueous suspension comprising same, the process comprising contacting said aqueous suspension with H_2S for a time sufficient to selectively precipitate the clay portion, said clay having platinum, palladium or gold associated therewith.

6. The process of claims 1 and 5 wherein, upon treatment with H_2S, precipitation of the clay is accompanied by detachment of the metal therefrom and the formation of colloidal suspension thereof in water.

4,354,871

CLEANER-POLISH COMPOSITIONS

David C. Sutton, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 13, 1981, Ser. No. 310,557

Int. Cl.[3] C09G *1/04*

U.S. Cl. 106—3 12 Claims

1. A surface-treating emulsion composition comprising from about 66 to 97 percent by weight water, from about 1 to 25 percent by weight of a hydrocarbon solvent having a kauributanol value within the range of about 20 to 50 and having a boiling range within the range of 80° to 200° C.; from 0.2 to 1.20 percent by weight surfactant, from about 1 to 5 percent by weight of a film-former, and from about 0.50 to 6.0 percent by weight of a monomeric alpha-olefin containing from 10 to about 18 carbon atoms.

4,354,872

METAL OXIDE OIL SLURRIES

George T. Kekish, Chicago; Mei-Jan L. Lin, Naperville, and John H. Collins, Bloomingdale, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 101,938, Dec. 10, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,302

Int. Cl.[3] C04B *9/00, 9/02, 9/04;* C23F *11/00*

U.S. Cl. 106—14.27 6 Claims

1. A metal oxide slurry consisting essentially of:

(a) about 50% by weight of magnesium oxide or the entity of magnesium oxide plus alumina

(b) about 1% by weight of an oil-soluble emulsifier and wetting agent

(c) about 4% by weight of an oil-soluble dispersant

(d) about 2% by weight of an insoluble thickening agent

(e) about 43% by weight, or a balance, of a hydrocarbon oil.

4,354,873

UNDERWATER ANTIFOULANT COMPOSITION

Robert F. Supcoe, Annapolis, Md., and Thomas Radakovich, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1981, Ser. No. 264,904

Int. Cl.[3] C09D *5/08, 5/14*

U.S. Cl. 106—18.32 2 Claims

1. An antifouling material having a viscosity of between about 25,000 and 45,000 cps. at 25° C. for application to submerged surfaces consisting essentially of, by weight percent, of

from about 2% to about 10% of fumed silica thixotropic thickening agent;

from about 50% to about 80% dimethylpolysiloxane having a molecular weight between about 1,200 and 12,000 and a viscosity between about 10 and 1,000 centistokes at 25° C.;

from about 20% to about 45% of antifoulant selected from the group of 2, 4, 5, 6-tetrachloroisophthalonitrile, copper oxides and copper 2-ethyl hexoate

from about 0.2% to about 4.0% of a surfactant for improving the displacement of the water molecules from the submerged surface, wherein the surfactant is selected from the group of anionic and amphoteric surfactants.

4,354,874

COMPOSITION AND PROCESS FOR CONSOLIDATING SOIL

Thomas M. Vickers, Willoughby, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 30, 1981, Ser. No. 316,854

Int. Cl.[3] C09J *1/02*

U.S. Cl. 106—74 10 Claims

1. In a liquid alkali metal silicate composition curable to a solid upon standing and comprising water, an alkali metal silicate and glyoxal, the improvement which comprises incorporating into said composition a sodium bisulfite/sodium metabisulfite mixture as a retarder for silicate gelling, whereby gelling of the resulting composition is significantly inhibited by comparison to that of a liquid alkali metal silicate-glyoxal composition, and it is easily pumpable at an application temperature of 100° F. or higher.

4,354,875

CONTROLLING THE CURING TIME OF ALKALI METAL SILICATES USING DERIVATIVES OF GLYOXAL

Larry J. Powers, Madison, and Thomas M. Vickers, Willoughby, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 30, 1981, Ser. No. 316,857
Int. Cl.³ C09J 1/02
U.S. Cl. 106—74 12 Claims

1. In a liquid alkali metal silicate composition curable to a solid upon standing and comprising water, an alkali metal silicate and silicate acidogen, the improvement which comprises incorporating as the silicate acidogen, a glyoxal derivative which is 2,3-dihydroxy-1,4-dioxane or glyoxal trimer, whereby gelling of the resulting composition is inhibited sufficiently so that it is easily pumpable at an application temperature of 100° F. or higher.

4,354,876

UTILIZATION OF DRY SCRUBBER WASTE MATERIALS

William C. Webster, Norristown, Pa., assignor to Webster & Assoc. Ltd., Norristown, Pa.

Filed Sep. 26, 1980, Ser. No. 191,065
Int. Cl.³ C04B 1/00
U.S. Cl. 106—85 38 Claims

1. A process for preparing a cured compacted product from dry flue gas scrubbing waste materials, said process comprising the steps of:

(a) providing a substantially dry fly ash-containing powder obtained from the dry scrubbing of fly ash-containing flue gas with lime, said fly ash-containing powder comprising fly ash in intimate admixture with microparticulate crystallites of scrubber reaction materials selected from the group consisting of calcium sulfite, calcium sulfate, hydrates of calcium sulfite and calcium sulfate, calcium oxide, calcium hydroxide and mixtures thereof;

(b) contacting said fly ash-containing powder with a predetermined amount of water to produce a powder/water mixture;

(c) mixing said powder/water mixture in a manner and for a time sufficient to produce a uniform distribution of said water without the formation of large agglomerates or a sticky plastic mass;

(d) placing said mixture in the desired configuration at the utilization site;

(e) compacting the placed mixture within a predetermined time subsequent to the contacting step to a density of at least about 70% of the laboratory dry density of said mixture; and

(f) curing the compacted material in place to form said cured compacted product.

4,354,877

DEMOLITION AGENT, ITS PREPARATION AND ITS USE

Toshio Kawano, Ichihara; Shiro Ishii, Zushi; Koichi Soeda, Tokyo, and Jyunichiro Migita, Yokohama, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda, Japan

Filed Oct. 31, 1980, Ser. No. 202,786
Int. Cl.³ C04B 7/02
U.S. Cl. 106—90 6 Claims

1. A method of demolition of a brittle material in which one or more holes are drilled in the brittle material, and the holes are filled with an aqueous slurry of a demolition agent which acts by generating expansive stress upon hydration, characterized in that the demolition agent comprises a powdery material of 30 to 95 parts by weight of a powdery hard-burned quick lime whose crystal sizes are 10 to 100 microns, 5 to 70 parts by weight of a hydraulic material and 0.1 to 5 parts by weight of an admixture comprising a water reducing agent to 100 parts by weight of said mixture of the powdery hard-burned quick lime and the hydraulic material.

4,354,878

MINERAL ARTICLE SUCH AS THERMAL INSULATION CONTAINING VISUAL IDENTIFICATION MEANS

Ralph M. Hutchison, Evergreen; Phillip C. Martin, Conifer, and Francis Y. Willingham, Littleton, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 76,657, Sep. 18, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,932
Int. Cl.³ C04B 1/00
U.S. Cl. 106—120 4 Claims

1. An asbestos-free mineral article containing particulate indicating material incorporated into the mineral matrix in an amount effective to provide visual indicia contrasting in color and appearance with the color and appearance of said matrix, said matrix comprising synthetic calcium silicate or synthetic calcium silicate hydrate, said indicating material being present in said matrix as 0.5 to 5 percent by weight of said article, being thermally stable at the service temperature of said article and having no significant adverse effects on the thermal and physical properties of said article.

4,354,879

UTILIZATION OF FIBROUS WASTE

Gerald J. L. Griffin, 2 Waldemar Ave., Ealing, London W13 9PY, and Adrian J. Emck, Unit 1, Lea Green Colliery, Lowfield La., St. Helens, Merseyside WA9 5BG, both of England

Filed Jan. 21, 1981, Ser. No. 226,838
Int. Cl.³ C08B 1/00; C08L 1/00
U.S. Cl. 106—163 R 8 Claims

1. A board or solid product made from fibrous material compacted with a settable binder characterised in that the fibrous material consists essentially of raw hop waste which is fibrous in character and contains natural resin which provides at least part of the binder.

4,354,880

METHOD OF FORGE-CONDITIONING NON-FERROUS METALS PRIOR TO ROLLING

Ronald D. Adams, and E. Henry Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 80,368, Oct. 1, 1979. This application Mar. 30, 1981, Ser. No. 248,189
Int. Cl.³ C22F 1/08
U.S. Cl. 148—2 12 Claims

1. In a method of continuously casting a high-impurity copper in a wheel-belt machine and hot forming said cast metal in substantially its as-cast condition at a hot-forming temperature by a plurality of substantial rolling compressions, the improvement comprising the steps of:

following casting of said metal and prior to said substantial rolling compression of said metal, forming a layer of finely distributed recrystallized grains at least at the surface of said metal by at least one tension-free forging compression of said metal.

4,354,881

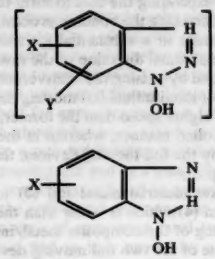
METHOD FOR ANTIRUST TREATMENT OF STEEL STOCKS

Kelichi Tanikawa, Yokohama; Tatsurou Obi, Tokyo; Susumu Otsuka, Hikari; Isao Manabe, Tokushima; Akiyoshi Inubushi, Tokushima, and Chiaki Maeda, Tokushima, all of Japan, assignors to Nippon Steel Corporation, Japan

PCT No. PCT/JP80/00254, § 371 Date May 5, 1981, § 102(e) Date May 5, 1981, PCT Pub. No. WO81/01157, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 22, 1980, Ser. No. 261,219
Claims priority, application Japan, Oct. 23, 1979, 54-136875
Int. Cl.³ C23F 7/00
U.S. Cl. 148—6.14 R 3 Claims

1. A method for antirust treatment of steel stock which comprises treating the steel stock with an aqueous solution or an emulsion containing 0.01–10% by weight of a 1-hydrox-

ybenzotriazole compound represented by the general formula:



where X and Y represent hydrogen atoms, hydroxy, alkyl, carboxyl, nitro or sulfonic groups, and further containing 0.01–5% by weight of one or more of C_8–C_{13} dialkanoic acids, and having a pH within the range of 7–10.

4,354,882

HIGH PERFORMANCE TUBULARS FOR CRITICAL OIL COUNTRY APPLICATIONS AND PROCESS FOR THEIR PREPARATION

James B. Greer, Houston, Tex., assignor to Lone Star Steel Company, Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,919
Int. Cl.³ C21D *9/08*
U.S. Cl. 148—12 R **23 Claims**

1. A process for manufacturing high performance tubulars having minimum yield strengths ranging from 80,000 to 140,000 psi characterized by improved sulfide stress cracking resistance comprising the steps of providing a killed steel, comprising in amounts by weight 0.20 to 0.35 percent carbon, 0.35 to 0.90 percent manganese, 0.80 to 1.50 percent chromium, 0.15 to 0.75 percent molybdenum, 0.25 percent maximum nickel, 0.35 percent maximum copper, 0.04 percent maximum phosphorus, 0.04 percent maximum sulfur, 0.35 percent maximum silicon, and the balance iron, except normal steel making impurities, forming the steel into tubular form, wherein the cross-sectional area of the tubular form is in the range of 10 to 40 percent larger than the cross-sectional area of the finished tubular, subjecting the tubular form to a first intercritical heat treatment to recrystallize and refine the grain structure, removing surface defects by grinding, sizing the ground, heat-treated tubular form by cold working to the finished tubular dimensions, subjecting the sized tubular to a second intercritical heat treatment to recrystallize and refine the grain structure, and subjecting the finished tubular to a quench and temper process wherein the tubular is austenitized, quenched, and tempered to produce a substantially tempered martensitic structure having a minimum yield strength in the range of 80,000 to 140,000 psi.

4,354,883

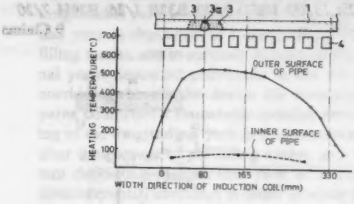
METHOD FOR IMPROVING THE RESIDUAL STRESS IN AUSTENITIC STAINLESS STEEL PIPES AND THE LIKE BY INDUCTION HEATING

Masanori Terasaki, Yokohama, Japan, assignor to Daiichi Kashuha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,490
Claims priority, application Japan, Jun. 7, 1978, 53/67626
Int. Cl.³ C21D *9/50*
U.S. Cl. 148—127 **9 Claims**

1. In the method for improving the residual stress of the weld in a welded austenitic stainless steel pipe to thereby reduce stress corrosion cracks, in which method the welded pipe is heated in the vicinity of the welded portion thereof from the radial outside thereof by an induction heating element while a fluid coolant is passed through the pipe to cool the inside of the pipe to thereby provide a temperature differential between the radial inside and radial outside of the pipe, the improvement:

wherein the induction heating element is multiturn, and



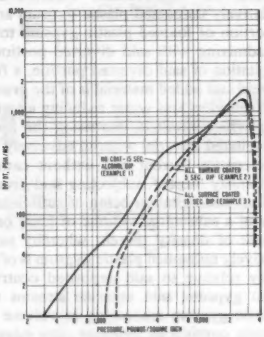
wherein one of (a) the axial spacing between adjacent turns of the induction heating element and (b) the radial distance between the pipe and the heating element is varied so as to produce a predetermined temperature over the area of the weld.

4,354,884

PROCESS FOR PREPARING PROGRESSIVE BURNING PROPELLANT GRANULES

Rafelix A. Williams, Radford, Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,143
Int. Cl.³ C06B *45/28*
U.S. Cl. 149—10 **4 Claims**


NO COAT-IS SEC. FLOOR DIP (EXAMPLE 1)
ALL SURFACE COATED 5 SEC. DIP (EXAMPLE 2)
ALL SURFACE COATED 15 SEC. DIP (EXAMPLE 3)
PRESSURE, POUNDS/SQUARE INCH

1. A process for preparation of progressive burning propellant granules of the single base, double base and triple base types from solvent-wet granules cut from propellant strands coming from the extrusion step in the propellant manufacturing process and prior to drying the solvent wet granules to remove processing solvents, said process comprising:

(a) wetting all surfaces of the solvent-wet propellant granules with a mixture of burning rate deterrent and solvent, said burning rate deterrent being selected from dimethyl diphenyl urea, diethyl diphenyl urea, ethylene dimethacrylate, lead-2-ethyl hexoate and linear polyesters capable of diffusing into said propellant granule, said polyesters having a weight average molecular weight of from about 1,500 to about 30,000, melting point not exceeding 190° F. and being substantially nonmigrating within said propellant strand at temperatures below 150° F., and continuing wetting for a time sufficient to permit the burning rate deterrent to penetrate into the propellant granule,

(b) promptly washing the resulting deterrent coated propellant granules with water to remove excess mixture of burning rate deterrent and solvent from the surfaces of said propellant granules, and

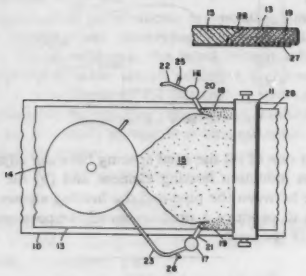
(c) drying the resulting deterrent coated granules.

4,354,885

HARD-EDGE WALLBOARD

George H. White, North Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Jun. 15, 1981, Ser. No. 273,587
Int. Cl.³ B32B 13/00; B05D 5/00; B32B 3/26; B29H 7/20
U.S. Cl. 156—39 9 Claims



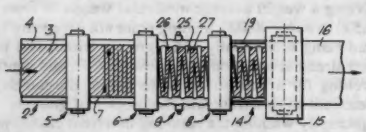
1. In a method of manufacturing gypsum wallboard which comprises depositing a central stream of foamed plastic gypsum on a table and depositing separate streams of relatively unfoamed plastic gypsum along opposite sides of the central stream, leveling the combined streams to form a single flat slab, and drying to produce a unitary monolithic core having edge portions of greater density than the main central portion of the monolithic core, the improvement wherein said separate streams of relatively unfoamed plastic gypsum are formed by diverting a portion of foamed plastic gypsum to at least one agitator and admixing with said diverted portion, prior to a subsequent agitation of said diverted portion, a freshly added material wherein said added material is of the group consisting of gypsum set retarders and water reducing agents and which has properties which result in increasing the fluidity of the subsequently agitated material without adversely affecting the setting characteristics thereof and without causing any decrease in the density thereof, subjecting said diverted portion to said agitation, said agitation being of sufficient intensity to cause the loss of a substantial volume of foam causing a substantial increase of density therein whereby said deposited stream of relatively unfoamed plastic gypsum is of substantially greater density relative to said deposited central stream of foamed plastic gypsum, said separate streams of relatively unfoamed plastic gypsum amounting in volume to sufficient material to form continuous elongate core edge portions at each edge of said wallboard of from about one-half inch to about four inches wide.

4,354,886

METHOD FOR MAKING ELECTRICAL HEATING MATS FROM AN EXPANDED FOIL-INSULATION COMPOSITE

Hans A. Bergersen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,492
Int. Cl.³ H01B 7/02, 13/00; H01C 17/28
U.S. Cl. 156—50 6 Claims



1. In an improved method for manufacturing an electrical heating foil or mat structure comprising a metal strip arranged in a meander like pattern to constitute an electrical resistance element (27) bonded to at least one insulating carrier film (10, 11) and comprising the steps of making cuts in a raw material metal foil (3) and expanding the cuts to form the meander like pattern before undertaking the bonding process, and where the cuts, which are made in a substantially transverse direction relating to the longitudinal direction of the raw material metal foil (3), are expanded by passing the transversally cut metal foil through two sets of longitudinal foil moving devices (6, 8), the latter moving at a higher speed than the former, so as to stretch the foil in a controlled manner, wherein in the foil stretching process effected by the foil moving devices, the improvement comprises the step of;

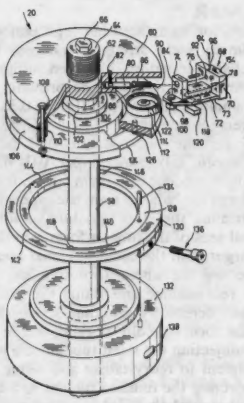
bonding the raw material metal foil (3) to a stretchable insulation film (4) which is wider than the metal foil (3), prior to passing of the composite metal/insulation foil (2) to the first one of the two foil moving devices (6), so that in the composite foil (2) the insulation film (4) is extended on both sides of the metal foil (3), which extended side areas are left uncut during the process in which the metal foil (3) and the film (4) are cut so as to only stretch these side areas during the cut expanding process.

4,354,887

LABEL TRANSFER VACUUM DRUM FOR LABELLER

Robert V. Total, St. Marys, Pa., assignor to Canadian Stackpole Limited, Scarborough, Canada

Filed Dec. 8, 1981, Ser. No. 327,881
Int. Cl.³ B05B 1/00
U.S. Cl. 156—64 32 Claims



1. An apparatus for labelling conveyed articles comprising means for transferring a label from a supply of labels onto a face of a pad mounted on a revolving drum, with the label's front against said pad face, means for controlling a supply of vacuum to an outlet means on said pad face, said control means providing a vacuum to hold a transferred label on said face and removing the vacuum as a label is applied to a conveyed container to release a label from said pad face, said revolving drum passing such held label by means for applying glue to the label back and contacting such glued label back to a conveyed article in a manner to deposit such glued released label on such article, said pad being movable relative to said drum from an extended position which contacts a label back with said glue applying means to retracted position which avoids contact with said glue applying means, as said drum rotates, means for biasing said pad toward said retracted position, means for extending said pad from its biased retracted position to said extended position, said extending means positioning said pad in said extended position with a label on said pad's face and in the absence of a label allowing said biasing means to retract said

pad to its retracted position before said pad passes said glue applying means, means in response to a vacuum being maintained by a label on said pad face for retaining said pad in said extended position to apply glue to a label back and apply the glued label to a conveyed article, said retaining means being inactive in response to a loss of vacuum on said pad face due to the absence of a label over said outlet means thereby allowing said biasing means to retract said pad to its retracted position and avoid contact with said glue applying means.

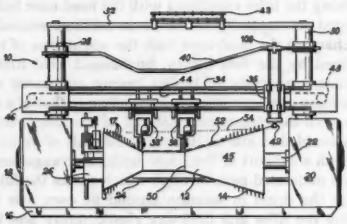
31. In a method for applying glue to a label preparatory to contacting such glued label to an article, comprising transferring a label onto a pad and holding such label on said pad by using vacuum, passing said pad by a means for applying glue to such label and contacting said pad to an article to place such glued label on the article and removing the vacuum to release the label at the time of contacting label to article, normally withdrawing said pad as it is passed by said glue applying means when no label is present on said pad to avoid applying glue to said pad and using the vacuum maintained by the presence of a label on said pad to actuate a brake means which precludes withdrawing said pad to apply thereby glue to the label on said pad.

4,354,888

PROCESS AND MACHINE FOR MANUFACTURING PIECES OF REVOLUTION MADE OF THREE-DIMENSIONAL MATERIAL OF WHICH THE GENERATRIX HAS AT LEAST ONE CONCAVE PART

Bruno Bompard, and Alain Bruyere, both of Lyons, France, assignors to Commissariat a l'Energie Atomique, Paris and Societe J. Brochier & Fils., Villeurbanne, both of, France

Filed Apr. 9, 1981, Ser. No. 252,324
Claims priority, application France, Apr. 11, 1980, 80 08178
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—175 **6 Claims**



1. Process for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part, said process consisting in making a support mandrel provided with rows of pins defining therebetween longitudinal corridors and circumferential corridors, in disposing superposed layers of yarns in said corridors by winding and by filling, in densifying the assembly thus obtained and finally in eliminating the support mandrel,

wherein the longitudinal yarns are deposited in corresponding corridors,

these yarns are maintained in the corridors at the level of said concave part, wherein the longitudinal yarns are maintained in the corresponding corridors by winding at least one yarn in at least one of the circumferential corridors located at the level of said concave part and wherein the longitudinal yarn which is disposed in one of the longitudinal corridors is temporarily maintained by means of a retractable member before it is maintained by winding said yarn in said corresponding circumferential corridor.

2. Machine for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part, said machine comprising means for supporting, in rotation, a mandrel provided with rows of pins defining therebetween longitudinal corridors and circumferential corridors, winding means and filing means adapted to deposit in said corridors superposed layers of yarns,

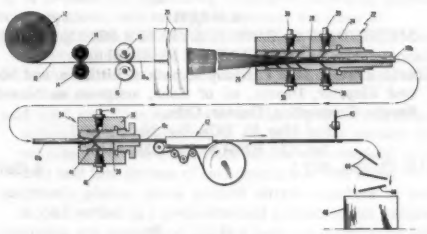
wherein said machine comprises, in addition, at least one device for maintaining the longitudinal yarns, disposed at the level of said concave part and provided to apply the longitudinal yarn in the bottom of the concave part when this yarn is deposited in a longitudinal corridor by the filling means, and to maintain in this position the longitudinal yarns deposited previously in the other longitudinal corridors wherein the device for maintaining the filling yarns comprises a retractable member ensuring the holding of the longitudinal yarn in the corresponding corridor after the passage of the filling means, and a winding system depositing at least one yarn in at least one of the circumferential corridors in order to maintain the longitudinal yarns previously deposited by the filling means in the other longitudinal corridors.

4,354,889

INK RESERVOIR ELEMENT FOR USE IN A MARKING INSTRUMENT, AND METHOD AND APPARATUS FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 17,106, Mar. 5, 1979, Pat. No. 4,286,005.
This application Feb. 11, 1981, Ser. No. 233,309
Int. Cl.³ D04H *3/14*
U.S. Cl. 156—180 **10 Claims**



1. A method for producing ink reservoir elements of predetermined length and cross-sectional size and shape for use in marking instruments, comprising the steps of:

(a) uniformly embossing at least one surface of a continuous web of flexible thermoplastic fibrous coherent sheet material compatible with formic acid with a series of parallel longitudinally extending grooves forming capillaries capable of transporting ink which extend longitudinally from end to end of the finished elements, said sheet material being composed of an interconnecting network of randomly arranged, highly dispersed, continuous-filament thermoplastic fibers which are bonded together at the filament junctions;

(b) compacting the embossed web together into a rod-like formation whose longitudinal axis extends parallel to said embossed grooves;

(c) passing the compacted embossed web through a heated confined area, and introducing a heated gas into said compacted embossed web during its passage through said confined area, thereby bonding the compacted embossed web into a dimensionally stable rod-shaped body; and

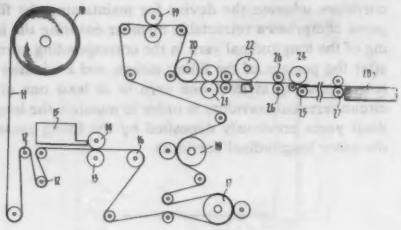
(d) transversely cutting said rod-shaped body into said predetermined lengths.

4,354,890

METHOD OF PRODUCING REINFORCED PAPER

Peter M. Maffey, Wantirna, Australia, assignor to Bowater Tutt Industries, Pty. Ltd., Melbourne, Australia

Filed Mar. 23, 1981, Ser. No. 246,905
Claims priority, application Australia, Mar. 24, 1980, PE2878
Int. Cl.³ B32B 31/00, 7/14
U.S. Cl. 156—264 7 Claims



1. A method of producing sheets of reinforced paper comprising printing a hot-melt adhesive onto the surface of a continuously moving web of paper in a configuration comprising two annuli of reinforcement joined by a neck portion, cooling the adhesive, cutting the web across the neck portion, and trimming the web into sheets of paper.

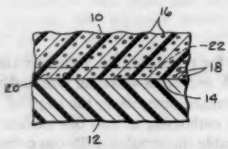
4. The method according to claim 1 comprising an additional step of reblocking the sheets of paper and securing the sheets together by heating the edges of the sheets adjacent the reinforcement to melt the adhesive.

4,354,891

METHOD OF CURING POLYESTER RESIN IN THE PRESENCE OF RUBBER

Charles Lostak; John L. Sznopek, both of Littleton, and Manfred Klepetar, Denver, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed May 30, 1978, Ser. No. 910,920
Int. Cl.³ B29H 9/10; B32B 25/08
U.S. Cl. 156—307.3 6 Claims



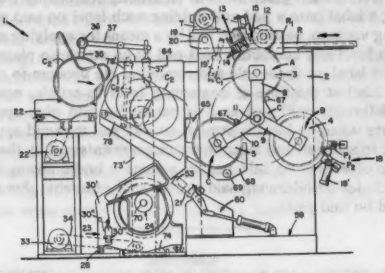
1. A process for achieving full cure of a peroxide cured polyester resin body which is in contact on at least one surface with a surface of a rubber body, which comprises maintaining reaction conditions during curing such that the effective rate of the curing reaction of the polyester resin in the presence of a peroxide curing agent associated therewith is sufficiently faster than the effective rate of a competing reaction between said rubber surface and said peroxide curing agent that said polyester resin body becomes essentialy fully cured in the interfacial region adjacent to the contact interface between said surface of said resin and said surface of said rubber body wherein said conditions comprise utilizing as said rubber body an elastomeric material with an effective rate of surface reaction with said peroxide curing agent which is inherently slower than said effective rate of said polyester curing reaction under the reaction conditions prevailing.

4,354,892

APPARATUSES FOR APPLYING ELASTOMERIC FILLERS TO TIRE BEAD-CORES

Luciano Tarantola, and Cesare Migliarini, both of Milan, Italy, assignors to Societa Pneumatici Pirelli S.p.A., Milan, Italy

Filed Oct. 1, 1980, Ser. No. 192,862
Claims priority, application Italy, Oct. 9, 1979, 26329 A/79
Int. Cl.³ B29H 17/32
U.S. Cl. 156—398 19 Claims



1. An automatic apparatus for assembling an elastomeric filler with a vehicle tire bead-core comprising a frame, and associated with the frame at least one drum rotating around its own axis adapted to provide a seat for a bead-core, a disc having an axis of rotation substantially parallel to the axis of the drum for initiating rotation of the drum with the relative periphery and for assembling the filler with the bead-core, means for butt-splicing the ends of the filler together, and means for loading the bead-core, said apparatus being characterized by the fact of comprising, first means for orienting and maintaining the filler assembled with the bead-core before it is discharged substantially on the drum midline, second means for discharging the bead-core with the orientation of the filler determined by the first means, unchanged, said first means comprising a plurality of bodies having contoured surfaces with a sliding characteristic corresponding to that of a metal in contact with the elastomeric material of the filler, said bodies being assembled to idle on its own small shaft of rotation associated with a support of the frame with an arrangement originating an undulated path through which passes the filler associated to the drum in rotation around its own axis thereby stretching the filler and opposing elastic return and bending with respect to the drum midline, said second means comprising, a discharging device at localized action on the opposite sides of the filler with relative advancing mechanism of said device in the plane of the drum midline.

4,354,893

COMBINATION ROOFING MATERIAL UNROLLING AND HEAT APPLYING APPARATUS

William E. Kugler, 2989 S. Detroit Way, Denver, Colo. 80210, and James M. Pacello, 7330 Poppy Way, Goldea, Colo. 80401

Filed Aug. 24, 1981, Ser. No. 295,734
Int. Cl.³ B32B 31/26
U.S. Cl. 156—497 10 Claims

1. A combination roofing material unrolling and heat applying apparatus, comprising:

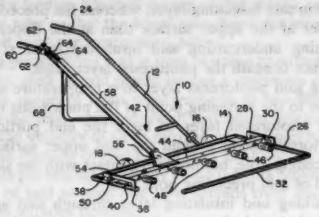
frame means;

heating means connected to said frame means, said heating means having a first end and a second end, said heating means adapted to emit a fluid to be ignited;

first means for engaging a roll of the roofing material; and

connecting means for interconnecting said frame means and said first means so that the roll of roofing material and said frame means move simultaneously together, said connecting means including guide means which supports said first

and second ends of said heating means, said first end of said heating means being movable independently of said second end of said heating means relative to said guide

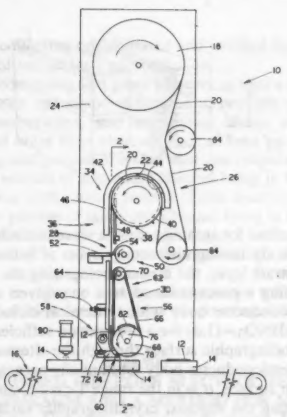


means, said heating means outputting heat for softening an an adhesive layer formed on the roofing material while the roofing material is unrolled.

4,354,894
APPARATUS FOR DEPOSITING A COUPON ON A PACKAGE

Robert T. Lewis, Louisville, and John H. Sexstone, Anchorage, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 4, 1981, Ser. No. 289,931
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—517 10 Claims



1. An apparatus for depositing a coupon onto a package as the package moves past the apparatus, comprising:

a supply web of a plurality of coupons;

a rotatably mounted and driven coupon advance drum adapted to engage said supply web of coupons in overlaying relationship around at least a portion of its periphery for advancing said coupon web as the advance drum rotates;

web hold down means adjacent the periphery of said advance drum over which said coupon web is overlaid for assuring said coupon web does not separate from its overlaying relationship on the periphery of said advance drum;

coupon web stripper means for stripping said coupon web from the periphery of said advance drum;

web cutting means located next to said stripper means for cutting said coupon web into individual coupons;

conveyor means for moving individual coupons, one at a time, from said web cutting means;

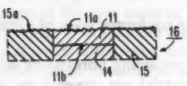
coupon alignment means operatively cooperating with said conveyor means for interrupting the movement of a coupon with said conveyor means and aligning the coupon web with the path of the package upon which it is to be deposited; and,

coupon discharge means for transporting individual coupons, one at a time, from said alignment means and depositing the coupon onto the package moving past it, said coupon discharge means comprising a coupon release plate adjacent said conveyor means mounted for movement toward and away from said conveyor means, and a coupon engagement shoe operatively associated with said conveyor means for movement therewith and adapted to periodically register with said coupon release plate whereupon said coupon engagement shoe moves said release plate away from said conveyor means and contacts a coupon at said coupon alignment means moving the coupon past said coupon alignment means and depositing the coupon onto the moving package.

4,354,895
METHOD FOR MAKING LAMINATED MULTILAYER CIRCUIT BOARDS

Theron L. Ellis, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,614
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—631 12 Claims



1. A method for fabricating multilayer laminated printed circuit apparatus, said method comprising the steps of:

providing a thin conductive first layer having first and second opposite surfaces, and temporary base member means having an outer surface peelably adhered to said first surface,

said temporary base member means having a predetermined surface profile characteristic on said outer surface for providing a conformal surface profile characteristic on at least said first surface of said conductive first layer,

additively plating plural printed circuit members to said second surface in a predetermined printed circuit pattern,

removing any portions of said first layer not plated to by said circuit members to expose the underlying parts of said outer surface of said base member means and thereby to expose the sides between said first and second surfaces of the remaining portions of said first layer plated to by said circuit members,

thereafter providing an uncured dielectric member means over said printed circuit members of said pattern,

thereafter curing in a predetermined manner said dielectric member means into an integral dielectric second layer having a predetermined surface in contact with said underlying parts of said outer surface of said temporary base member means, said dielectric second layer embedding therein said circuit members and said sides of said remaining portions of said first layer and having said first surfaces of said remaining portions in flush mounting relationship with respect to said predetermined surface, and

thereafter peeling away said temporary base member means to expose said predetermined surface of said dielectric second layer and said first surfaces of said remaining portions of said first layer, said predetermined surface of said dielectric second layer being adapted for lamination to another predetermined dielectric third layer of said board, and said conformal surface characteristic of said first surfaces of said remaining portions providing an adhering surface to said dielectric third layer to prevent

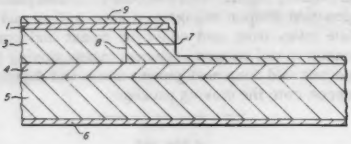
delamination between said dielectric second and third layers.

4,354,896

FORMATION OF SUBMICRON SUBSTRATE ELEMENT

William R. Hunter, Garland; Al F. Tasch, Jr., Richardson, and Thomas C. Holloway, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1980, Ser. No. 175,470
Int. Cl.³ H01L 21/302
U.S. Cl. 156—643 22 Claims



1. A method for patterning a submicrometer substrate element which comprises:

(a) sequentially depositing a plurality of layers on the substrate surface;

(b) forming a laterally extending submicrometer cavity by selectively removing an intermediate portion of said surface layers;

(c) depositing a conformal layer of a material which fills said cavity; and

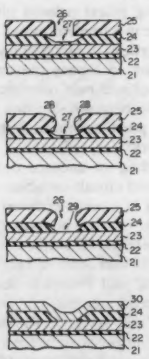
(d) removing remaining portions of said surface layers and substrate material not covered by remaining conformal layer.

4,354,897

PROCESS FOR FORMING CONTACT THROUGH HOLES

Makoto Nakajima, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 13, 1981, Ser. No. 234,194
Claims priority, application Japan, Feb. 14, 1980, 55-16858
Int. Cl.³ B44C 1/22; H01L 21/306
U.S. Cl. 156—643 9 Claims



1. A process for forming a through-hole in an insulating layer for providing a connection between an upper conductor layer and a lower conductor layer respectively disposed on the upper and lower surfaces of said insulating layer comprising the steps of:

forming a patterned photoresist layer on the upper surface of said insulating layer comprising a mask having at least one aperture therein for selectively exposing said insulating layer at a portion of said upper surface thereof at which a through-hole is to be formed;

wet-etching said exposed portion of said insulating layer to form a preceding hole having a sloped sidewall and a floor within said insulating layer, wherein the preceding hole is wider at the upper surface than at the floor, said wet-etching undercutting said insulating layer at its upper surface beneath the photoresist layer mask;

heating said photoresist layer to a temperature sufficiently close to the softening point of the photoresist material of said photoresist layer to bend the end portion of said photoresist layer around the said upper surface of said preceding hole, but not into contact with the sloped sidewall of said preceding hole; and

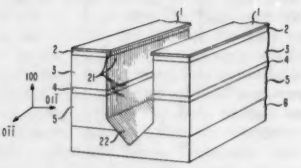
dry-etching said insulating layer through said aperture in said photoresist layer mask to complete said through-hole through said insulating layer to said lower surface thereof while maintaining the slope of said sloped sidewall thereof.

4,354,898

METHOD OF PREFERENTIALLY ETCHING OPTICALLY FLAT MIRROR FACETS IN INGAASP/INP HETEROSTRUCTURES

Larry A. Coldren, Holmdel, and Kazuhito Furuya, Hazlet, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 24, 1981, Ser. No. 276,942
Int. Cl.³ H01L 21/308
U.S. Cl. 156—647 17 Claims



1. A method for etching a multilayer semiconductor heterostructure body having alternating layers of InGaAsP and InP on a substrate layer, the method comprising the steps of:

contacting a predetermined area on a given surface of the semiconductor body with a chemical etchant solution of $HCl:HNO_3=(1:\alpha)$ for a time period sufficient to expose a crystallographic surface through the alternating layers of the semiconductor body substantially perpendicular to the given surface, α is in the range $1<\alpha\leqq 5$, and

contacting the exposed crystallographic surface with HCl for a time period sufficient to expose a preferred crystallographic plane as an optically flat mirror facet of the semiconductor heterostructure body.

4,354,899

DEVICE FOR CONCENTRATION AND POSSIBLE PURIFICATION OF MINERAL ACIDS, PARTICULARLY SULPHURIC ACID

Hans Broberg, Drostvägen; Lars Douren, Noravägen, and John Troeng, Gesällgatan, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 41,168, May 21, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,978
Claims priority, application Sweden, Jun. 21, 1978, 7807068
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ B01D 1/06
U.S. Cl. 159—13 A 25 Claims

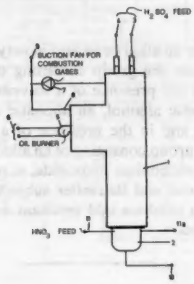
1. An improved apparatus for concentrating and purifying liquids, comprising:

a source of hot gases;

at least one elongated evaporating tube arranged upright in position to be heated by said gases, said at least one evaporating tube having an inner diameter and a height;

means for feeding liquid at the top of said at least one evaporating tube so that the liquid runs down the inner wall of said at least one evaporating tube;

packing pieces filling said at least one tube to a fraction of its height, each of said pieces having a maximum dimension in the range of from one-twentieth to one-fifth of said inner diameter, said fraction of said height being chosen so that the velocity of gases moving upward past said pieces at said fraction of said height is in the range of 1.5 to 2.0 meters per second, whereby liquid flowing down the inner wall of said at least one tube spreads over said packing pieces without flooding;



means for collecting concentrated and purified liquid at the bottom of said at least one tube;

means for conveying said gases adjacent at least a portion of said at least one evaporating tube to provide transfer of heat therebetween, said conveying means comprising inner and outer flow channels each at least partially surrounding said portion of said at least one evaporating tube, a lower portion of said outer channel being in fluid communication with a lower portion of said inner channel and an upper portion of said outer channel being in fluid communication with said source of hot gases; and

means mounted in at least one of said inner and outer channels for causing turbulation of hot gases flowing therethrough, to enhance heat transfer between said hot gases and said at least one elongated evaporating tube.

4,354,900

STRENGTHENED FIBEROUS ELECTROCHEMICAL CELL DIAPHRAGM AND A METHOD FOR MAKING

Rodney R. Bailey, Greenville, S.C.; Carl W. Brown, Painesville, Ohio; Shan P. Tsai, Mentor, Ohio, and Louis W. Hruska, Geneva, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Dec. 1, 1980, Ser. No. 211,694

Int. Cl.³ C25B *13/00*

U.S. Cl. 162—106 **15 Claims**

1. A method for making a porous asbestos diaphragm for use in an electrochemical process including the steps of:

(1) slurrying a mixture of fibers including primarily asbestos fibers in an aqueous solution of at least one of NaCl within a concentration range of from about 5 percent of saturation to about 50 percent of saturation and NaOH within a concentration range of from about 4 weight percent to about 50 weight percent;

(2) drawing the slurry through a porous surface;

(3) depositing the fibers upon the porous surface to a desired thickness;

(4) drawing a substantial quantity of wash water through the diaphragm;

(5) dissolving a basic compound selected from a group consisting of $(NH_4)_2CO_3$, NH_4OH, $KHCO_3$, K_2CO_3, Na_2CO_3, $NaHCO_3$, weak caustic and brine in water to form a basic solution;

(6) drawing the basic solution through the diaphragm at least until a pH of between 7 and 11 is achieved generally uniformly throughout the diaphragm,

(7) drawing an aqueous solution of ammonium zirconium carbonate within a range of concentration of between about 3 weight percent and about 50 weight percent through the diaphragm to thoroughly saturate the diaphragm;

(8) withdrawing excess ammonium zirconium carbonate solution from the diaphragm;

(9) heating the diaphragm to remove a substantial portion of water remaining in the diaphragm; and

(10) further heating the diaphragm to between 110° C. and 400° C. to remove further moisture and to oxidize the ammonium zirconium carbonate to ZrO_2 and combustion by-products.

4,354,901

FLEXIBLE ABSORBENT BOARDS

Steven L. Kopolow, Plainsboro, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Oct. 5, 1979, Ser. No. 82,400

Int. Cl.³ D21H *3/00, 5/24*

U.S. Cl. 162—158 **10 Claims**

1. A method for producing an absorbent, relatively thick flexible absorbent board of fiberous material comprising:

forming a slurry of water with no more than about 0.1% by weight solids, said solids comprising cellulosic fibers and particulate hydrocolloidal material in a ratio of at least 0.01 grams of hydrocolloidal material per gram of cellulosic fibers; forming a wet web from said slurry; drying said web to a water content of less than 10.0% by weight to form a undensified dry web; and increasing the density of said dry web by at least 10.0%;

whereby said densified, dry web has a high tensile strength, and low stiffness relative to said undensified dry web, said densified web having a tensile of at least 10 kg/cm², a Gurley Stiffness of less than 40 gms, and a thickness of more than 0.3 millimeters.

4,354,902

FLOWBOX SYSTEM FOR WET-LAYING A MULTIPLY FIBROUS WEB

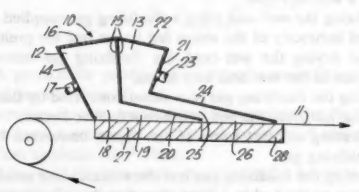
Brian W. Attwood, 155 Memorial Rd., Hanham, Bristol, England

Filed May 27, 1981, Ser. No. 267,530

Claims priority, application United Kingdom, Jun. 21, 1980, 8020411

Int. Cl.³ D21F *1/02, 1/04*

U.S. Cl. 162—300 **1 Claim**



1. An integral flowbox system for wet-laying a multiply fibrous web on a moving foraminous wire, comprising a pair of enclosed explosion chambers arranged respectively upstream and downstream with regard to the direction of movement of the wire, the downstream wall of the upstream chamber being in common with the upstream wall of the downstream cham-

ber, the downstream and upstream walls of each chamber converging from a top wall towards the wire, each chamber being provided with a stock inlet directed at their common wall and a stock outlet at the bottom of the chamber, the stock outlets comprising slice plates defining respective shear flow passages for delivering the stock from the explosion chambers onto the wire, one said slice plate being common to both flow passages and an extension of said common wall of the explosion chambers, and suction means below the wire under each stock outlet extending from the upstream wall to the downstream wall of each stock outlet whereby the layer of stock from the upstream outlet is immediately dewatered prior to the layer from the downstream outlet being laid thereon.

4,354,903

PROCESS FOR DRYING AND PREHEATING COAL UTILIZING HEAT IN DRY COOLING OR QUENCHING OF COKE

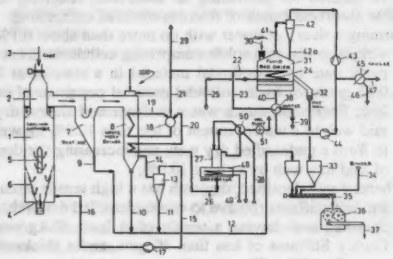
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,155

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013325

Int. Cl.³ C10B *39/02, 45/00*

U.S. Cl. 201—6 **6 Claims**



1. A process for drying and preheating coking coal using heat from coke to be cooled comprising:

passing a cooling gas over hot coke in a coke cooling chamber to cool the coke and heat the cooling gas;

recycling the heated cooling gas through a waste heat boiler and back to the coke cooling chamber to form a first closed cycle;

supplying water to the waste heat boiler to form steam by heating the water indirectly with the heated cooling gas;

feeding steam formed in the waste heat boiler to a fluidized bed of wet coal to indirectly preheat and dry the wet coal in a second cycle;

fluidizing the wet coal using a fluidizing gas supplied to the bed indirectly of the steam fed to the bed for preheating and drying the wet coal, the fluidizing gas converting water in the wet coal into steam;

feeding the fluidizing gas plus steam converted by the fluidizing gas from the bed and into a further heater;

condensing at least some of the steam converted by the fluidizing gas;

returning the fluidizing gas less the at least some condensed steam to the bed in a third closed cycle;

indirectly heating the returning fluidizing gas using steam from the waste heat boiler in the further heater before it returns to the bed;

said three cycles for transferring heat from the coke to be cooled, to the wet coal to be preheated and dried being conducted in a temperature range of between 90° and 250° C., so that no desulfurization of the coal takes place.

4,354,904

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Thomas P. Malloy, Lake Zurich, Ill.; Mark A. Halter, Columbia, Md., and David W. House, Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 61,210, Jul. 27, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,516

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—59 R **12 Claims**

1. A process for the preparation of an aromatic aldehyde comprising subjecting a methyl-substituted aromatic compound to an electrical energy including direct electric current in an electrochemical cell in the presence of a nucleophile consisting essentially of an organometallic oxide representative of:

R—O—M

wherein R is either an alkyl or an aryl moiety and M is an alkali metal selected from the group consisting of sodium, lithium and potassium; in the presence of a solvent consisting essentially of an aliphatic alcohol, an aliphatic diol, a ketone, or mixtures thereof; and in the presence of a reaction initiator selected from the group consisting of an alkali metal hydroxide and a quaternary ammonium hydroxide, at reaction conditions to produce an acetal and thereafter subjecting said acetal to said hydrolysis to produce said resultant aromatic aldehyde, which is recovered.

4,354,905

METHOD FOR THE ELECTROLYSIS OF AN AQUEOUS SOLUTION OF AN ALKALI METAL CHLORIDE AND AN ANODE THEREFOR

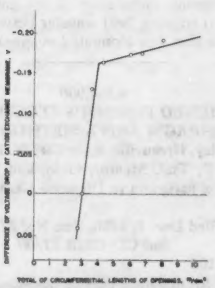
Mitsuo Yoshida, and Hiroyoshi Matsuoka, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1981, Ser. No. 253,664

Claims priority, application Japan, Apr. 15, 1980, 55-48634; Dec. 10, 1980, 55-173126

Int. Cl.³ C25G *1/34, 11/03, 9/00, 11/08*

U.S. Cl. 204—98 **19 Claims**



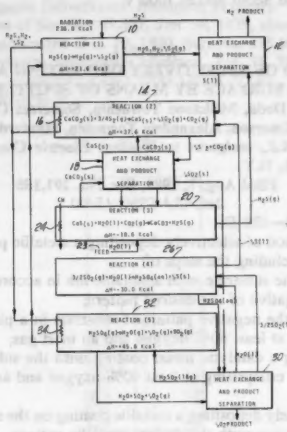
1. A method for the electrolysis of an aqueous solution of an alkali metal chloride in an electrolytic cell partitioned by means of a cation exchange membrane into an anode chamber adapted to accomodate therein an anode and a cathode chamber adapted to accomodate therein a cathode, the improvement which comprises: using a flat perforated plate anode in the anode chamber wherein the value obtained by dividing the total of the circumferential lengths of the openings formed in the perforated plate anode at the portion opposite to the cation exchange membrane by the total area of said portion including the area of said openings is 3 m/dm^2 or more.

4,354,906

COMBINED RADIOLYTIC AND THERMOCHEMICAL PROCESS FOR GENERATION OF HYDROGEN

Henry J. Gomberg; Rupert A. Lee, and John G. Lewis, all of Ann Arbor, Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Feb. 21, 1980, Ser. No. 123,375
Int. Cl.³ B01J 19/08
U.S. Cl. 204—157.1 H 8 Claims



1. A combined thermochemical and radiolytic process for generation of hydrogen comprising the steps of:

(a) subjecting hydrogen sulfide at 1100° K. and 40 atmospheres pressure to radiation energy such that at least a portion of said hydrogen sulfide is dissociated into hydrogen and sulfur,

(b) separating the hydrogen product of step (a),

(c) reacting the sulfur product of step (a) with calcium carbonate at 525° K. and 40 atmospheres pressure to form calcium sulfide, sulfur dioxide and carbon dioxide,

(d) reacting the calcium sulfide and carbon dioxide products of step (c) with water at 350° K. and 40 atmospheres pressure to form calcium carbonate and hydrogen sulfide,

(e) reacting the sulfur dioxide product of step (c) with water at 573° K. and 204 atmospheres pressure to produce sulfuric acid and sulfur,

(f) reacting the sulfuric acid product of step (e) at 1100° K. and one atmosphere pressure to produce water and oxygen,

(g) recycling the sulfur product of step (e) and the calcium carbonate product of step (d) to said step (c), and

(h) recycling the hydrogen sulfide product of said step (c) to said step (a) to form a closed cycle process utilizing hydrogen sulfide as a working fluid for generating hydrogen from water.

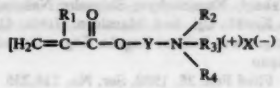
4,354,907

RADIATION POLYMERIZATION OF CATIONIC MONOMER IN AQUEOUS ALCOHOL

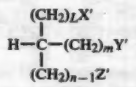
Sueo Machi, Takasaki; Isao Ishigaki, Meabashi; Toshimi Okada, Kakogawa, and Shigeaki Washio, Kobe, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Taki Chemical Co., Ltd., Kakogawa, both of, Japan

Filed Feb. 5, 1980, Ser. No. 118,967
Claims priority, application Japan, Feb. 5, 1979, 54-11977
Int. Cl.³ C08F 2/46
U.S. Cl. 204—159.22 5 Claims

1. A process for the production of water-soluble, substantially solid cationic polymers comprising the step of irradiating an aqueous solution containing (1) at least 50% by weight but below the saturation point of one, or two or more of amino esters selected from those compounds having the generic formula:



wherein R_1 represents a hydrogen atom or a methyl group; R_2 represents a hydrogen atom or an alkyl group having 1–4 carbon atoms; R_3 and R_4 each represents an alkyl group having 1–4 carbon atoms; Y represents an alkylene group having 1–4 carbon atoms; and $X^{(-)}$ represents an anion; or a mixture of said amino ester or esters with acrylamide; and (2) at least 0.1% by weight of an alcohol having the generic formula:



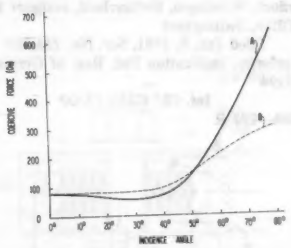
wherein X', Y' and Z' each represents H or OH, providing at least one of X', Y' and Z' is OH, and L, m and n each represents a positive integer; said irradiation being carried out at an initial reaction temperature in the range of 0°–60° C. with ionizing radiation rate in the range of 500–200,000 rads/Hr, and a total irradiation dose rate in the range of 1,000–300,000 rads.

4,354,908

PROCESS FOR THE PRODUCTION OF MAGNETIC RECORDING MEMBERS

Ryuji Shirahata; Tatsuji Kitamoto; Yasuo Tamai, and Masaaki Suzuki, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 688,192, May 20, 1976, abandoned.
This application Jul. 11, 1978, Ser. No. 923,752
Claims priority, application Japan, May 23, 1975, 50/61628
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 N 8 Claims



1. A process for producing a magnetic recording member, comprising the steps of:

generating ferromagnetic metal vapor particles from a vaporization source in a reduced pressure of about 10^{-4} Torr to about 10^{-7} Torr;

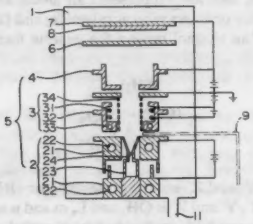
ionizing said ferromagnetic vapor particles by means of an electron beam; and

accelerating said ionized ferromagnetic metal vapor particles, by means of an electric field between said vaporization source and a support having a field strength of at least about 5 kv/m, toward said support to form a vapor beam which has an angle of incidence of at least about 50° with respect to said support, thereby producing a magnetic film on said support.

4,354,909
PROCESS FOR PRODUCTION OF MAGNETIC RECORDING MEDIUM

Toshinori Takagi, Nagaokakyo; Shinsaku Nakata, Toyonaka; Kazuhiko Kanki, Uji, and Masahiro Hotta, Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1980, Ser. No. 124,235
Claims priority, application Japan, Feb. 23, 1979, 54-20957; Apr. 2, 1979, 54-39685; Apr. 2, 1979, 54-39686
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 N 6 Claims

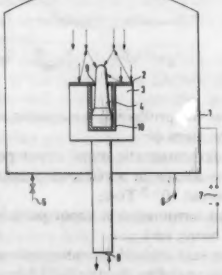


1. A process for producing a magnetic recording medium, which comprises heating a closed type crucible having an injection nozzle and containing at least one ferromagnetic material selected from the group consisting of cobalt, cobalt-containing alloys and mixtures of cobalt with other elements in a vacuum chamber kept at 10^{-3} to 10^{-8} torr thereby to generate a cluster of the atoms of the ferromagnetic material from the injection nozzle, impinging electron beams generated by an electron beam generator against the cluster to ionize it, accelerating the generated cluster ions in an electric field, and depositing the ions on a substrate composed of a non-magnetic material.

4,354,910
METHOD AND APPARATUS FOR THE PARTIAL COATING OF A SUBSTRATE BY CATHODE SPUTTERING

Horst Rordorf, Weiningen, Switzerland, assignor to Berna AG Olten, Olten, Switzerland

Filed Jan. 8, 1981, Ser. No. 223,285
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002194
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R 6 Claims



6. A method for coating a plurality of substrates by cathode sputtering, comprising providing cathode means having a plurality of cavities therein and a sputtering surface, providing an anode, forming a chamber enclosing at least one of said cathode and anode, supplying a carrier gas to and withdrawing said carrier gas from said chamber, maintaining a condition of vacuum within said chamber, characterized by insulatingly mounting said substrates in said cavities in such manner that the parts thereof which are not to be coated are disposed within their respective cavities and the parts to be coated extend beyond the cathode means sputtering surface, and in that by means of a glow discharge in the anomalous cathode fall in a pressure range of about 0.1–5 Torr, the coating is performed at about 300 to 1000 V.

4,354,911
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE BY MEANS OF SPUTTERING

Thomas C. Dodd, Millstone Township, Somerset County, and John A. Emerson, Alexandria Township, Hunterdon County, both of N.J., assignors to Western Electric Company Inc., New York, N.Y.

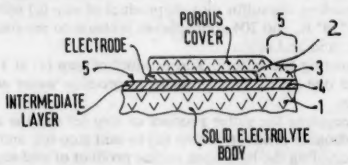
Filed Aug. 7, 1981, Ser. No. 291,155
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 EC 20 Claims

1. A method of selectively depositing a metallic pattern on a substrate including the steps of:
coating the substrate with a suitable ink in accordance with the negative of the desired pattern;
cleaning the negative patterned substrate in a plasma comprising at least 60% oxygen and an inert gas;
sputtering a catalytic metal coating onto the substrate in a plasma comprising at least 60% oxygen and an inert gas; and
electrolessly depositing a metallic coating on the substrate in accordance with the desired metallic pattern.

4,354,912
SOLID ELECTROCHEMICAL SENSOR

Karl-Hermann Friese, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,407
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904069
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S 15 Claims



1. Solid electrolyte sensor element for electrochemical sensing of composition of a gas to which the element is exposed comprising
an electrode (2) positioned to contact said gas;
an oxygen ion conductive solid electrolyte body (1) which comprises partially stabilized ZrO_2; and
an ion conductive solid electrolyte intermediate layer (4) having a higher specific oxygen ion conductivity than said solid electrolyte body (1) and which does not contain metal and which consists essentially of fully stabilized ZrO_2 which is stabilized with a stabilizer oxide comprising at least one of the materials of the group consisting of Y_2O_3, Yb_2O_3, Sc_2O_3, oxides of heavy rare earth other than the foregoing, CaO and MgO,
said intermediate layer (4) being located between and integral with the electrode (2) and the surface of the solid electrolytic body (1) thereby positioning the electrode (2) out of direct contact with the solid electrolyte body (1) to

form the three phase boundary of said sensor element between (i) ion conductive solid electrolyte, (ii) electrode, and (iii) gas, at the contact of said electrode (2) and said ion conductive solid electrolyte intermediate layer (4).

4,354,913

MOLECULE SELECTIVE ENZYME ELECTRODE

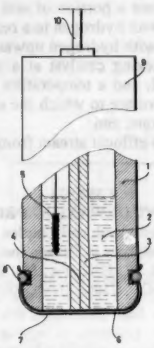
Erno Pungor; Jeno Havas; Geza Nagy, and Emma Porjesz, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Miiszergyarto Szövetkezet, Budapest, Hungary

Continuation of Ser. No. 49,337, Jun. 18, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,104

Claims priority, application Hungary, Jun. 21, 1978, RA 683

Int. Cl.³ C12Q *1/00*; G01N *27/30*

U.S. Cl. 204—195 P **2 Claims**



1. A hollow molecule-selective sensor having a sensing electrode, a reference electrode and a permeable, enzymatically active membrane comprising a self-supporting, 10–15 micron thick protein membrane found in nature which closes the bottom of the sensor, said membrane containing on its surface the reaction product solely of an enzyme and glutaric aldehyde.

4,354,914

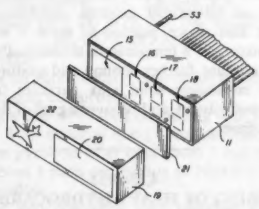
MARKING HEAD FOR ELECTROCHEMICAL PROCESS

Philip C. Szeliga, Utica, N.Y., assignor to Electromark, Div. of Mohawk International Inc., Utica, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,380

Int. Cl.³ C25D *17/14, 21/00*; C25B *11/12*; G01D *15/10*

U.S. Cl. 204—224 R **11 Claims**



1. A marking head for use in an electrochemical marking process of the type wherein an electrode is fired against a receiving surface in the presence of an electrolyte to record an image upon the receiving surface, said marking head including a non-conductive board having at least one character generating module position on the front face thereof that contains a plurality of individual electrically isolated electrode segments, each of said electrode segments including a highly conductive metal substrate seated in contact against the front face of the board and a carbon coating covering the outer surface of the substrate, and electrical means connected to each individual electrode segment for independently firing the connected segment whereby the segments may be fired in different patterns to record images of selected characters upon the receiving surface.

4,354,915

LOW OVERVOLTAGE HYDROGEN CATHODES

John Z. O. Stachurski, Amherst; Dirk Pouli, Williamsville; John A. Ripa, Lancaster, and Gerald F. Pokrzyk, Lewiston, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,235

Int. Cl.³ C25B *9/00, 11/06, 11/10*

U.S. Cl. 204—242 **17 Claims**

1. A cathode for use in electrochemical processes, at least part of the surface portion of said cathode comprising a codeposit of a first metal selected from the group consisting of iron, cobalt, nickel, and mixtures thereof, a leachable second metal or metal oxide selected from the group consisting of molybdenum, manganese, titanium, tungsten, vanadium, indium, chromium, their oxides and combinations thereof, and from about 0.5 to about 25 atomic percent of a substantially nonleachable third metal selected from the group consisting of cadmium, mercury, lead, thallium, bismuth, and mixtures thereof.

4,354,916

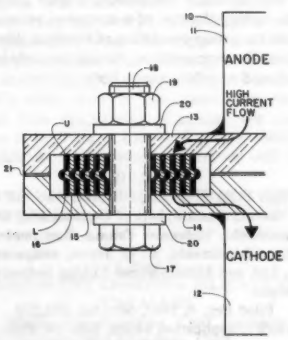
HIGH CURRENT DENSITY ELECTRICAL CONTACT DEVICE

Gerald R. Pohto, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 4, 1981, Ser. No. 259,814

Int. Cl.³ C25B *9/04*

U.S. Cl. 204—253 **12 Claims**



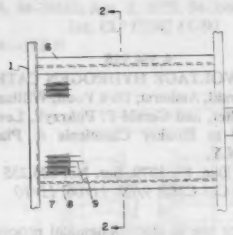
1. A fluid and air tight, high current density-stable, electrical contact device for conductively joining components of an electrolytic cell comprising a spring-like spiral or coil of electroconductive metal or metal alloy having a nonconductive or conductive, oxidation-resistant filler (seal) between the spiral rings of the contact and wherein said spiral is positioned so that the edges and common longitudinal axis thereof are substantially perpendicular to the faces of the cell components to be electrically contacted.

4,354,917

GAS ELECTRODE WITH ASYMMETRIC CURRENT DISTRIBUTOR

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,574
Int. Cl.³ C25B 11/03, 9/04, 11/12; H01M 4/86
U.S. Cl. 204—284 4 Claims



1. An improved gas electrode having an active surface layer of activated carbon particles bound together by a carbon black-fibrillated polytetrafluoroethylene mixture with a current conductor content therewith, said current conductor comprising an asymmetric woven wire mesh having more conductive wire strands in the direction generally perpendicular to the major current feed to said conductor than in the direction generally parallel to said direction of major current feed.

4,354,918

ANODE STUD COATINGS FOR ELECTROLYTIC CELLS

Larry G. Boxall, and Dennis C. Nagle, both of Baltimore, Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jan. 14, 1981, Ser. No. 225,066
Int. Cl.³ C25C 3/06, 3/08, 7/02
U.S. Cl. 204—286 4 Claims

1. An anode assembly for the electrolytic production of aluminum, said assembly comprising a steel anode stud, an intermediate coating thereon of a corrosion resistant material selected from the group consisting of titanium diboride zirconium diboride, titanium carbide, zirconium carbide, and mixtures thereof, and a carbon anode body.

4,354,919

PROCESS FOR THE LIQUEFACTION OF COAL

Shoichi Oi; Noriaki Ohnishi, both of Ogawamachi; Shinya Mori, Tsubukuhonmachi; Tadanobu Takata, Kumamoto, and Keiichiro Koba, Ohtanimachi, all of Japan, assignors to Mitsui Coke Co., Ltd. and Mitsui-Kozan Coking Industry Co., Ltd., both of, Japan

Filed Feb. 4, 1981, Ser. No. 231,273
Claims priority, application Japan, Feb. 19, 1980, 55-18591
Int. Cl.³ C10G 1/06
U.S. Cl. 208—10 7 Claims

1. In a process for the liquefaction of coal by heating a slurry composed of the coal, a solvent and a catalyst under an elevated pressure of hydrogen, the improvement in which the catalyst is an iron ore consisting mainly of a hydrate of iron oxide, said iron ore containing from 20 to 70 percent by weight of iron, not more than 3 percent by weight of sulfur, and from 5 to 20 percent by weight of bound water, based on the weight of the iron ore freed of adhesive moisture.

4,354,920

COAL LIQUEFACTION PROCESS

Joel W. Rosenthal, El Cerrito, and Arthur J. Dahlberg, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 754,198, Dec. 27, 1976, Pat. No. 4,330,389. This application Mar. 9, 1981, Ser. No. 241,898
Int. Cl.³ C10G 1/06, 1/00
U.S. Cl. 208—10 24 Claims

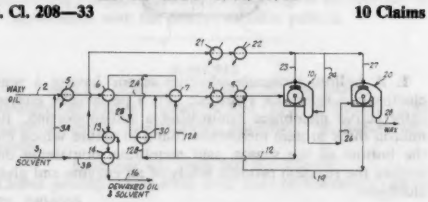
1. A process for liquefying coal, which comprises:
(a) forming a coal-solvent slurry by mixing subdivided coal with a solvent;
(b) substantially dissolving said coal in said solvent by heating said slurry in a dissolving zone in the presence of added hydrogen, thereby forming a mixture comprising solvent, dissolved coal, and insoluble solids;
(c) contacting at least a portion of said mixture containing insoluble solids with hydrogen in a reaction zone by passing said portion with hydrogen upwardly through a fixed bed of hydrocracking catalyst at a slurry hourly space velocity of 0.1–2, and a temperature below 800° F. and below the temperature to which the slurry was heated in said dissolving zone, and
(d) withdrawing an effluent stream from said reaction zone.

4,354,921

SOLVENT DEWAXING PROCESS

Herbert J. Pitman, Nederland, and Charles W. Harrison, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,946
Int. Cl.³ C10G 73/06, 73/32
U.S. Cl. 208—33 10 Claims



1. In a process for dewaxing a waxy lubricating oil stock by cooling said oil stock in the presence of a dewaxing solvent to a temperature effective for removal of wax therefrom by filtration wherein said oil stock is diluted prior to cooling with a portion of said dewaxing solvent to form a prediluted oil stock, the improvement which comprises cooling a major portion of said prediluted oil stock to a temperature above its cloud point, cooling a minor portion of said prediluted oil stock to a temperature below its cloud point thereby forming wax crystals dispersed in an oil-solvent mixture, combining said minor portion with said major portion to form a wax-oil-solvent composite mixture at a temperature substantially at the cloud point of said mixture, further cooling said mixture to dewaxing temperature, separating solid wax particles from resulting dewaxed oil and solvent, and recovering oil of diminished wax content therefrom.

4,354,922

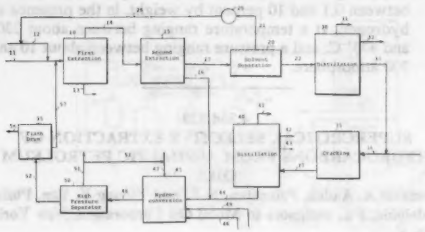
PROCESSING OF HEAVY HYDROCARBON OILS

Francis J. Derbyshire, Ewing; Philip Varghese, Trenton, and Darrell D. Whitehurst, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,576
Int. Cl.³ C10G 11/16, 21/06
U.S. Cl. 208—68 25 Claims

1. An integrated process for upgrading diverse refractory hydrocarbon oils which comprises (1) contacting a heavy hydrocarbon oil feedstock in a first extraction zone with a dense-gas fluid solvent under supercritical conditions of tem-

perature and pressure for said solvent to dissolve a portion of said oil feedstock and form a first solvent extract phase containing the dissolved oil portion and an undissolved residual solids-enriched phase; (2) passing the said first solvent extract phase into a second extraction zone, and adjusting supercritical conditions of temperature and pressure to change the solubility of said oil portion in said dense-gas fluid solvent and cause formation of a second solvent extract phase containing dissolved hydrocarbon solute having a metals factor of less than about 30 and a Conradson Carbon Residue content of less than about 10, and condense or precipitate from said first solvent extract phase a separate asphaltic phase comprising heavy hydrocarbon constituents; (3) fractionating the second solvent extract phase in a separation zone to recover the dense-gas solvent, light hydrocarbon constituents having a boiling point



below about 500° F., and a hydrocarbon oil fraction having a boiling point range above about 500° F., and recycling the dense-gas solvent; (4) subjecting said above 500° F. range hydrocarbon oil fraction to cracking conditions to form a crackate product mixture, and fractionally distilling the crackate product mixture to yield 100°–650° F. range distillates, and a refractory hydrocarbon bottoms fraction; (5) charging said bottoms fraction, together with the asphaltic phase produced and separated in step (2), into a heating zone, wherein said charge under hydrogen pressure is converted by hydrocracking to a lighter hydrocarbon effluent having a boiling range of about 100°–700° F.; and (6) fractionating the lighter hydrocarbon effluent to remove gaseous light ends and provide a liquid hydrocarbon fraction boiling above about 200° F., and recycling said liquid hydrocarbon fraction as part of the feedstock to the first extraction zone in step (1).

4,354,923

CARBO-METALLIC OIL CONVERSION WITH LIQUID WATER, BALLISTIC SEPARATION AND CONTROLLED $CO:CO_2$ RATIO DURING CATALYST REGENERATION

George D. Myers, and Lloyd E. Busch, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,227
Int. Cl.³ C01G *11/18*
U.S. Cl. 208—113 **66 Claims**

1. A process for economically converting carbo-metallic oils to lighter products, comprising:

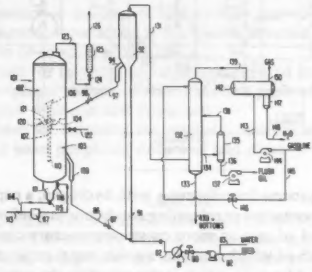
I. providing a converter feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with cracking catalyst bearing an accumulation of heavy metal(s) on said catalyst corresponding to substantially more than 600 ppm Nickel Equivalents, by weight, expressed as metal(s) on regenerated equilibrium catalyst;

III. bringing said converter feed together with liquid water in a weight ratio relative to feed in the range of about 0.04 to about 0.15;

IV. forming a stream containing a mixture of said converter feed, said catalyst and steam resulting from the vaporization of said liquid water and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined at a lineal velocity of at least about 25 feet per second for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

V. at at least one location along the elongated reaction chamber, including an outlet means at the downstream end of the elongated reaction chamber or an extension thereof, ballistically separating said catalyst from at least a substantial portion of the stream comprising said catalyst, steam and resultant cracking products formed in the elon-



gated reaction chamber, by projecting catalyst particles in a direction established by said elongated reaction chamber or said extension thereof, diverting vapors in said stream, including said steam and said products, by an abrupt change of direction relative to the direction in which said catalyst particles are projected and interposing wall means between the thus projected catalyst and the diverted steam and products;

VI. stripping hydrocarbons from said separated catalyst;

VII. regenerating said catalyst by burning the coke in at least one regeneration zone with oxygen-containing combustion-supporting gas while forming combustion product gases comprising CO and/or CO_2, and maintaining the $CO:CO_2$ molar ratio of the combustion product gases formed from the burning of at least the major weight portion of the coke at a level of at least about 0.25 while such gases are in heat exchange contact with the catalyst; and

VIII. recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,354,924

DUAL COMPONENT CHROMIA SILICATE CRACKING CATALYST

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 160,618, Jun. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,847, Aug. 22, 1979, and Ser. No. 76,891, Sep. 19, 1979. This application Sep. 29, 1980, Ser. No. 191,574
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 **19 Claims**

10. A process for catalytically cracking a hydrocarbonaceous feedstock comprising the step of contacting the feedstock under catalytic cracking conditions in a reaction zone in the absence of added hydrogen with a catalyst composition

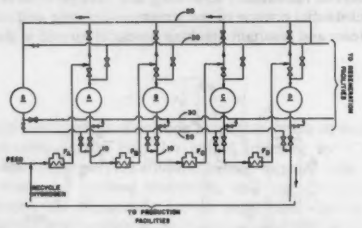
comprising an essentially alumina-free crystalline chromia silicate component having an internal pore structure which will allow entry of normal aliphatic and slightly branched aliphatic compounds, yet substantially exclude all compounds having a molecular dimension equal to or substantially greater than a quaternary carbon atom and at least one large pore size crystalline aluminosilicate cracking component.

4,354,925

CATALYTIC REFORMING PROCESS

James J. Schorfheide, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 30, 1981, Ser. No. 288,318
Int. Cl.³ B01J *23/90*
U.S. Cl. 208—140 **8 Claims**



1. In a process for reforming, with hydrogen, a naphtha feed which is contacted at reforming conditions in a reforming unit constituted of one or more on-stream reactors connected in series, each of which contains a noble metal catalyst which is deactivated by coke which is deposited on the catalyst,

the improvement comprising

burning the coke from the catalyst by the use of a gas comprising an admixture of from about 0.1 percent to about 10 percent oxygen, and at least about 20 percent carbon dioxide, based on the total volume of the gas.

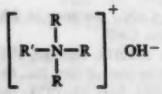
4,354,926

CATALYTIC COMPOSITE AND PROCESS FOR USE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 109,934, Jan. 4, 1980, Pat. No. 4,295,993. This application Dec. 10, 1980, Ser. No. 214,855
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ C10G *27/06*
U.S. Cl. 208—207 **14 Claims**

1. A method of treating a mercaptan-containing sour petroleum distillate by contacting said distillate at oxidation conditions in the presence of an oxidizing agent with a catalytic composite comprising a metal chelate, an alkali metal hydroxide, and a quaternary ammonium hydroxide disposed on a molecular sieve support, the quaternary ammonium hydroxide represented by the structural formula:



wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl, and R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, said alkali metal hydroxide comprising at least about 10 wt. % of said catalytic composite.

4,354,927

METHOD OF REMOVING CONTAMINANTS FROM HYDROCARBONACEOUS FLUIDS USING HIGH-SODIUM ALUMINA

Stuart S. Shih, Cherry Hill; Philip J. Angevine, West Deptford, and Stephen M. Oleck, Moorestown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1981, Ser. No. 222,851
Int. Cl.³ C10G *45/04, 29/04*
U.S. Cl. 208—251 H **12 Claims**

1. A method for reducing contaminant content of a hydrocarbonaceous fluid, said contaminant being selected from the group consisting of arsenic and selenium, said method comprising:

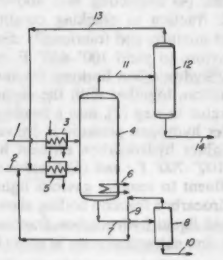
contacting said fluid with a particulate, porous catalyst consisting essentially of alumina having a sodium content between 0.1 and 10 percent by weight, in the presence of hydrogen, at a temperature ranging between about 230° and 475° C. and a pressure ranging between about 10 and 200 atmosphere.

4,354,928

SUPERCRITICAL SELECTIVE EXTRACTION OF HYDROCARBONS FROM ASPHALTIC PETROLEUM OILS

Costandi A. Audeh, Princeton, N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,728
Int. Cl.³ C10C *3/00*
U.S. Cl. 208—309 **3 Claims**



1. A process for extracting a hydrocarbon oil from an asphaltic feedstock, said process comprising the steps of contacting said feedstock with a low molecular weight organic solvent selected from the group consisting of ethylene glycols and thiophenes at a temperature and pressure equal to, or slightly greater than the critical temperature and critical pressure of said solvent so as to effect separation of said hydrocarbon oil from said feedstock by way of vapor-liquid phase separation and to form two immiscible phases comprising a heavy asphalt phase and a solvent phase containing said hydrocarbon oil, said hydrocarbon oil being substantially free of said asphalt and having a reduced metal content; separating said two immiscible phases and recovering said hydrocarbon oil from said solvent phase.

2. A process for extracting a hydrocarbon oil from an asphaltic feedstock, said process comprising the steps of contacting said feedstock with a low molecular weight organic solvent selected from the group consisting of naphthas, catalytically cracked gasolines, coker gasoline, FCC cycle oil, ethylene glycols and thiophenes, in the presence of a catalyst comprising a Group VI or Group VIII metal, or mixtures thereof, on an alumina support, at a temperature and pressure equal to, or slightly greater than the critical temperature and critical pressure of said solvent so as to effect separation of said hydrocarbon oil from said feedstock by way of vapor-liquid phase separation and to form two immiscible phases comprising a

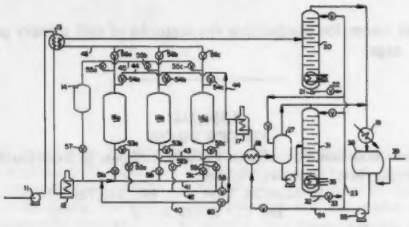
heavy asphalt phase and a solvent phase containing said hydrocarbon oil, said hydrocarbon oil being substantially free of said asphalt and having a reduced metal content; separating said two immiscible phases and recovering said hydrocarbon oil from said solvent phase.

4,354,929

PROCESS FOR SEPARATING NORMAL PARAFFINS FROM HYDROCARBONS MIXTURES

Anton Wessels, Brasschaat, and Andrija Fuderer, Antwerp, both of Belgium, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1980, Ser. No. 189,351
Int. Cl.³ C10G *25/03*
U.S. Cl. 208—310 Z **7 Claims**



1. In an isobaric process for separating normal paraffins from non-normal hydrocarbons in a gas oil-containing vapor feedstream by (1) the selective adsorption of normal paraffins by passage of said feedstream through a molecular sieve adsorbent bed, (2) cocurrent purge with n-hexane to sweep out void space vapor containing a high concentration of non-normal hydrocarbons from the effluent end of the bed, (3) countercurrent purge with n-hexane to desorb normal paraffin adsorbate from the bed, (4) recovery of n-hexane from said separated normal paraffins and non-normal hydrocarbons, and (5) recycling of said n-hexane for purging and desorbing of said bed and to dilute the gas oil-containing feedstream for adsorption at less than 700° F., the improvement comprising diluting said gas oil-containing feedstream with cocurrent purge effluent as a source of n-hexane used to enable said selective adsorption to be carried out at less than 700° F. without capillary condensation, wherein the initial portion of the cocurrent purge effluent containing essentially non-normal hydrocarbon is not employed for said feedstock dilution, and the remaining portion of said cocurrent purge effluent comprising about the last 10% to 80% of the total cocurrent purge effluent is used as a source of n-hexane for said feedstream dilution purposes, whereby the equipment size and energy consumption for processing of said recycle n-hexane are reduced and the utilization of said adsorbent and the efficiency of the adsorption process can be enhanced.

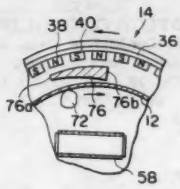
4,354,930

DEVICE FOR SEPARATING MIXTURE

Takato Nakajima, Sakakimachi, Japan, assignor to Kanetsu Kogyo Kabushiki Kaisha, Nagano, Japan

Division of Ser. No. 204,809, Nov. 7, 1980, Pat. No. 4,318,804. This application Jul. 9, 1981, Ser. No. 281,824
Claims priority, application Japan, Nov. 16, 1979, 54-147618; Dec. 12, 1979, 54-160343
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.³ B03C *1/12*
U.S. Cl. 209—221 **7 Claims**

1. A device for separating a mixture material comprising:
a drum disposed in a non-vertical posture and revolving in one direction about a longitudinal central axis thereof, said drum being formed of a nonmagnetic substance and supplied with a mixture material being treated;
an annular magnetic means surrounding said drum at a spacing from the outer peripheral surface thereof, and generating a magnetic field rotating in a reverse direction to the direction of rotation of said drum, so as to attract a magnetic material of said mixture material to the inner peripheral surface of said drum and exert on a nonmagnetic



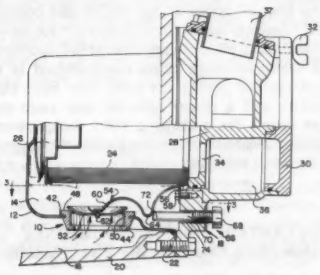
conductive material of said mixture material an electromagnetic force acting in the reverse direction to the direction of rotation of said drum;
a means for releasing said magnetic material from the inner peripheral surface of said drum in a predetermined rotational region in said drum; and
a means for receiving the magnetic material released from the inner peripheral surface of said drum.

4,354,931

CHECK VALVE ASSEMBLY WITH ACTUATOR

Aldo Allori, Brookfield; John A. Wilger, Chicago, and Thomas F. Reiff, Bridgeview, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,960
Int. Cl.³ B01P *35/02*
U.S. Cl. 210—136 **14 Claims**



1. In a hydraulic filter system housing with a fluid reservoir, a removable filter cartridge chamber and a check valve assembly disposed therebetween and comprising:
a chamber enclosure wall rigidly attached to the housing and separating said filter chamber from said fluid reservoir;
said enclosure wall having an inlet opening;
a valve seat extending about said opening and removably attached to said enclosure wall;
said valve seat having a central bore serving as a fluid flow conduit between said reservoir and said chamber;
a valve element movable between bore open and closed positions and engageable with said valve seat in the bore closed position, thereby regulating the volume of the fluid flow moving from said reservoir to said chamber;
biasing means removably attached to said housing at one end and connected with said valve element at another for urging said valve element to engage with said valve seat;

tension adjusting means mounted on said housing and movable therethrough for regulating tension in and actuating said biasing means thereby causing the associated valve element to move between said open and closed positions without compromising the housing leak integrity; and

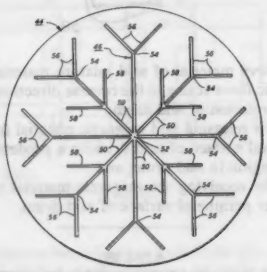
said tension adjusting means being able to place said valve element in a plurality of spatially fixed positions via said biasing means.

4,354,932

FLUID FLOW CONTROL DEVICE

Roderick J. McNeil, New Milford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 15, 1980, Ser. No. 197,302
Int. Cl.[3] B01A *15/08*
U.S. Cl. 210—198.2 12 Claims



8. An assembly comprising:

a liquid chromatography column, said column having packing material therein;

first means for retaining said packing material in said column, said first means having the same permeability as said packing material of said column; and

a fluid flow control device at one end of said column adjacent said retention means thereof, said device including a radial distribution plate having a patterned aperture therethrough which aperture being characterized in that all annuluses thereof having the same area have the same permeability and a means between said plate and said retention means for creating a fluid backpressure, said backpressure means having a comparatively lower permeability than said retention means.

4,354,933

IMPLANTABLE ARTIFICIAL KIDNEY

James P. Lester, 3506 Granny White Pike, Nashville, Tenn. 37204

Filed Feb. 23, 1981, Ser. No. 236,801
Int. Cl.[3] B01D *31/00;* A61M *1/03*
U.S. Cl. 210—257.2 13 Claims

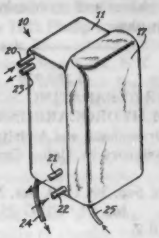
1. An artificial kidney comprising:

(a) a least one elongated microtubule having first and second end portions,

(b) said microtubule having longitudinally co-extensive arterial and venous passages and a urinary passage longitudinally co-extensive between said arterial and venous passages,

(c) said urinary passage having first and second opposed walls separating respectively said arterial passage and said venous passage from said urinary passage, said opposed walls being permeable to the flow of waste products in the bloodstreams respectively from said arterial and venous passages into said urinary passage,

(d) means for connecting the first and second end portions of said microtubule to an artery and a vein in a human body to cause arterial blood to flow in one direction through said arterial passage and venous blood to flow in the opposite direction through said venous passage, and



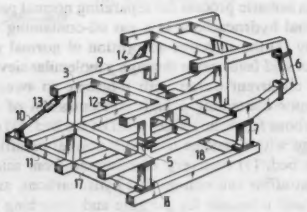
(e) means for discharging the contents of said urinary passage.

4,354,934

FILTER PRESS

Raimo Kohonen, Savonlinna, Finland, assignor to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Mar. 26, 1981, Ser. No. 247,749
Int. Cl.[3] B01D *33/04*
U.S. Cl. 210—386 1 Claim



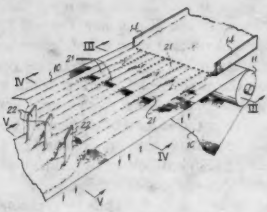
1. Improvements in a filter press for separating the liquid from the slit in a sludge comprising a girder frame having a pair of opposite sides and a pair of opposite ends extending transversely of said opposite sides, rollers extending between said opposite sides, bearings in said girder frame with said rollers journalled in said bearings, endless filter strips fitted over said rollers and extending in the direction between the opposite ends of said girder frame, removable frame sections located in one of said opposite sides so that with said frame sections removed said filter strips can be removed from said rollers and out of said girder frame, pull rods secured to the other one of said opposite sides for supporting said girder frame during the removal of said filter strips when said removable frame sections are removed from said girder frame, each of said opposite sides having an upper part and a lower part, each of said pull rods having a first end and a second end with said first ends secured to said upper part of the other one of said opposite sides, a support extension corresponding to each said pull rod telescopically mounted in the lower part of said girder frame and movable telescopically outwardly and inwardly relative to the other one of said opposite sides so that said support extensions can be extended outwardly transversely of the direction of said filter strips, the second ends of said pull rods secured to said support extensions outwardly from the other one of said opposite sides, and rigging screws in said pull rods intermediate the first and second ends thereof for adjusting said pull rods when said supports extensions are extended so that said pull rods are secured for supporting said girder frame when said filter strips are being exchanged.

4,354,935

APPARATUS FOR THICKENING SLUDGE

Eric P. Austin, Sandbach, and Howard J. Worrall, Kidsgrove, both of England, assignors to Simon-Hartley Limited, Stoke-on-Trent, England

Filed Jan. 5, 1981, Ser. No. 222,661
Claims priority, application United Kingdom, Jan. 23, 1980, 8002271
Int. Cl.³ B01D 33/04
U.S. Cl. 210—396 6 Claims



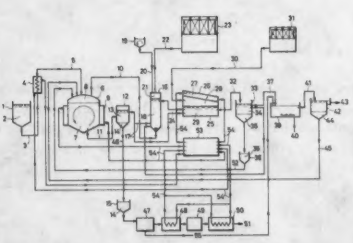
1. Apparatus for thickening sludge comprising a driven foraminous belt having a conveying run arranged at least substantially horizontally, a chute for feeding a mass of sludge onto the belt at one end of the conveying run, and a plurality of generally parallel strips attached to and extending from the output end of the feed chute in the direction of travel of the belt, part way along the latter, the strips resting freely on the belt and being spaced apart thus to cause sludge to be fed onto the belt in a number of discrete parallel paths and thus to leave a plurality of zones of the belt free of sludge to permit drainage of water from the parallel paths of sludge through the belt.

4,354,936

ANAEROBIC DIGESTION PROCESS

Masahiko Ishida; Ryoichi Haga, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,056
Claims priority, application Japan, May 20, 1980, 55-65909
Int. Cl.³ C02F 3/28, 3/32
U.S. Cl. 210—602 16 Claims



1. A process for the treatment of organic wastes, comprising the steps:

(a) anaerobically digesting organic wastes at a temperature of 30°–75° C. and a pH of 6.5–7.5 to obtain a digested slurry and fermentation gas containing methane or hydrogen, carbon dioxide and hydrogen sulfide;

(b) subjecting the digested slurry obtained in step (a) to a solid/liquid separation treatment to obtain separated digested water and digested sludge;

(c) adding calcium hydroxide to a part of the separated digested water obtained in the step (b) until the water becomes alkaline;

(d) contacting the alkaline digested water obtained in step (c) with the fermentation gas obtained in step (a) to absorb carbon dioxide and hydrogen sulfide in the digested water to produce a purified methane gas and thereby increase the concentration of hydrogen or methane in the gas;

(e) supplying a part of the digested water obtained in step (d) to a culturing system wherein photo-synthetic algae is cultured under illumination, thereby obtaining oxygen and algae culture, said culturing system being conducted at a pH of 7.5–9.5 and at a temperature of 30°–40° C.;

(f) subjecting the algae culture liquid obtained in step (e) to a solid/liquid separation treatment for obtaining algae and algae culture liquid supernatant;

(g) recycling and adding part of the algae culture liquid supernatant to the alkaline digested water of step (d) for absorbing carbon dioxide and hydrogen sulfide from the fermentation gas;

(h) subjecting additional alkaline algae culture liquid supernatant obtained in step (f) to an aerobic microbial treatment to reduce the BOD; and

(i) recycling algae obtained in step (f) into step (a) as feedstock for fermentation.

4,354,937

PROCESS FOR PRECIPITATING HEAVY METALS FROM WASTEWATER

Rolf O. Hallberg, Tyreso, Sweden, assignor to Vyrmetoder AB, Täby, Sweden

PCT No. PCT/SE80/00121, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02281, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 22, 1980, Ser. No. 220,058
Claims priority, application Sweden, Apr. 24, 1979, 7903598
Int. Cl.³ C02F 1/62
U.S. Cl. 210—607 7 Claims

1. A process for precipitating heavy metals from wastewater containing sulfate ions, wherein the water is treated with sulfate reducing bacteria which reduce the sulfate ions to hydrogen sulfide which in its turn precipitates the metal ions in the form of metal sulfides, wherein the bacteria are cultured in one or more culturing vessels in the presence of a nutritive solution and a portion of the wastewater, and that the resulting aqueous solution containing hydrogen sulfide produced by the bacteria is introduced into a precipitation vessel together with the remaining major portion of the wastewater.

4,354,938

HEMODIALYSIS MEMBRANE AND PROCESS AND APPARATUS FOR USING SAME IN HEMODIALYSIS

Axel Walch, Frankfurt; Max Bytzek, Wiesbaden; Jürgen Wildhardt, Wallrabenstein, and Klaus-Dieter Hammer, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,550
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736569
Int. Cl.³ B01D 13/00, 31/00
U.S. Cl. 210—637 12 Claims

1. In a method for performing hemodialysis, including the step of contacting blood with one side of a regenerated cellulose membrane and a rinsing fluid on the other side of said membrane, wherein the improvement comprises said membrane comprising the viscose membrane produced by a process consisting essentially of the steps of:

providing a viscose solution by xanthogenation;

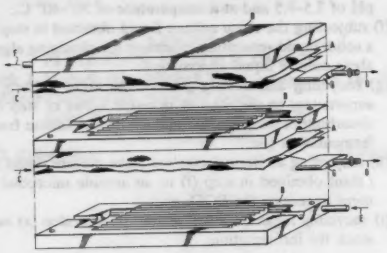
spinning the viscose solution by extrusion through a slot die to produce a viscose membrane;

regenerating the extruded viscose membrane to produce a membrane of cellulose hydrate gel;

freeing the membrane of cellulose hydrate gel through a bath containing a plasticizer for the cellulose hydrate to plasticize the membrane;

subsequent to said regeneration step and prior to the herein-

after recited drying step, transversely stretching the cellulose hydrate gel membrane by an amount between about 40 and 120 percent sufficient to compensate for any longitudinal stretching which occurs inherently in the foregoing steps and to produce, upon drying, a cellulose hydrate membrane substantially equally oriented in the longitudinal and in the transverse directions; and



thereafter drying the transversely stretched membrane, to produce a viscose membrane substantially equally oriented in the longitudinal and in the transverse directions and having in the dry state a birefringence of not more than about 6×10^{-3} and a phase difference of not more than about 150 nm.

4,354,939

REVERSE OSMOSIS DESALINIZATION UTILIZING PLURAL FLOW WORK EXCHANGE VESSELS

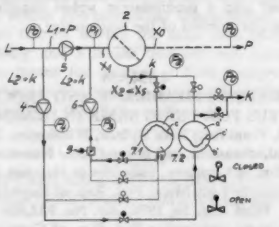
Kurt M. Pohl, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Continuation of Ser. No. 56,926, Jul. 12, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,186

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830987; Jun. 21, 1979, 2924971

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—637 **1 Claim**



1. A method for efficiently separating a salt-containing solution of sea water having a salt content of 38,000 ppm at an initial pressure (P_0) into a low salt permeate having a salt content of 500 ppm at pressure (P_0) and a high salt concentrate having a salt content of 57,000 ppm at a final pressure equal to (P_0) by pressuring the solution to a high pressure (P_1) in an input line upstream of a reverse osmosis permeable membrane of a reverse osmosis vessel, wherein the efficiency of the process is increased by utilizing first and second displacement vessels with each displacement vessel having rigid internal surfaces divided by a flexible wall into a first chamber connected to said reverse osmosis vessel and a second chamber connected to the input line of said reverse osmosis vessel; the method comprising the steps of:

A. pumping the solution to the pressure (P_1) and supplying the solution to said reverse osmosis vessel at pressure (P_1) to produce the low salt premeate downstream of the membrane at pressure (P_0) and high salt concentrate upstream of the membrane at pressure (P_2) less than (P_1);

B. applying the concentrate from said reverse osmosis vessel only to the first chamber of the first displacement vessel at the pressure (P_2) while opening the first chamber of the second displacement vessel to ambient pressure (P_0); pumping the solution in the second chamber of the first displacement vessel into the input line by overcoming the pressure difference between the pressure (P_3) of the solution in the second chamber of the first vessel and the pressure (P_1) of the solution in the input line with a pump disposed between the displacement vessel and input line, and pumping solution to the second chamber of the second displacement vessel at a pressure (P_4) considerably lower than the pressure required to pump solution from the first displacement vessel to the input line in order to move the wall in the second displacement vessel and push the concentrate from the first chamber of the second displacement vessel to evacuate concentrate from the second displacement vessel;

C. reversing the processes of step B by applying the concentrate from said reverse osmosis vessel only to the first chamber of the second displacement vessel at the pressure (P_2) while opening the first chamber of the first vessel to ambient pressure (P_0), pumping the solution in the second chamber of the second displacement vessel into the input line by overcoming the pressure difference between the pressure (P_3) of the solution in the second chamber of the second displacement vessel and the pressure (P_1) of the solution in the input line with a pump disposed between the displacement vessel and input line, and pumping solution to the second chamber of the first displacement vessel at the pressure (P_4) to move the wall in the first displacement vessel and push the concentrate from the first chamber of the first displacement vessel to evacuate concentrate from the first displacement vessel;

D. repeating step B and C while continuously performing step A with the pressures maintained as follows:

$P_0=1$ bar

$P_1=80$ bar

$P_2=75$ bar

$P_3=73$ bar

$P_4=3$ bar,

whereby the efficiency of the method is enhanced while avoiding the possibility that the low salt permeate will be contaminated by either the salt-containing solution or the high salt concentrate, should either of the displacement vessels rupture or fail.

4,354,940

SODIUM ALUMOGLUCOHEPTONATE, A PROCESS FOR ITS PREPARATION AND ITS USE AS SEQUESTERING AGENT

Peter Suhac; Natasa Hafner-Milac, and Bozidar Dolenc, all of Ljubljana, Yugoslavia, assignors to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o., Ljubljana, Yugoslavia

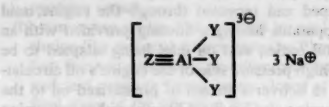
Filed Jul. 9, 1981, Ser. No. 281,744

Claims priority, application Yugoslavia, Feb. 14, 1979, 354/79

Int. Cl.³ C02F *5/10*

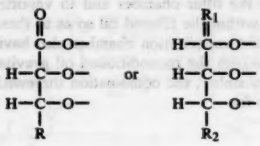
U.S. Cl. 210—698 **18 Claims**

3. A method for sequestering iron ions or calcium ions which comprises contacting said ions with sodium alumoglucoheptonate of the formula:



wherein

Z represents a residue of the formula



wherein

R represents a residue of a molecule of sodium D-glycero-D-gulo-heptonate or of sodium D-glycero-D-ido-heptonate, and

R_1 and R_2 represent moieties of a molecule of sodium D-glycero-D-gulo-heptonate or of sodium D-glycero-D-ido-heptonate,

Y represents a hydroxy group or three Y are joined to represent the residue Z.

4,354,941

PROCESS FOR CONTINUOUS SEPARATION OF POLLUTING MATTER FROM A CARRIER FLUID

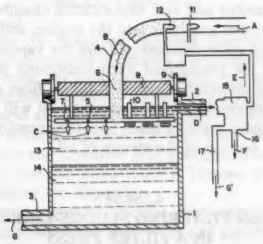
Georg Ronge, Schuhbauerstrasse #11, D-8311 Adlkofen, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,720

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009160

Int. Cl.³ C02F *1/24, 1/52*

U.S. Cl. 210—706 **15 Claims**



1. The process for separating contaminating matter from a contaminated carrier liquid through filtration wherein said contaminating matter comprises dissolved or particulate matter or oil with dissolved or particulate matter or oil, which comprises adding to said contaminated carrier liquid oil particles having been formed by subjecting a body of liquid oil to a pressure of at least about 600 atmospheres, said particles having a size between about 0.5 and 15 microns, said particles having an electrostatic charge and having a density lower than said carrier liquid and a composition to induce formation of insoluble hydroxide flocs in said contaminated carrier liquid, passing the resultant mixture into a chamber wherein it separates into an upper clean oil layer, an intermediate filtering layer comprising said formed flocs which contain the contaminants other than the oil in said oil layer and a third layer of cleaned carrier liquid substantially free of said contaminating matter whereby contaminating matter is filtered from said carrier liquid by said filtering layer and recovering said cleaned carrier liquid and said oil in the clean oil layer.

4,354,942

STABILIZATION OF MERCURY IN MERCURY-CONTAINING MATERIALS

Jerry J. Kaczur, Cleveland; James C. Tyler, Jr., Athens, and John J. Simmons, Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 26, 1980, Ser. No. 210,493

Int. Cl.³ B09B *1/00*; C02F *1/62*

U.S. Cl. 210—712 **18 Claims**

1. A process for stabilizing in situ soluble mercury in land or submarine deposits having mercury-containing materials which comprises applying to said deposits a stabilizing amount of an inorganic sulfur compound selected from the group consisting of potassium sulfide, alkaline earth metal sulfides, sulfides of transition elements number 25–30, aluminum sulfides, cadmium sulfides, antimony sulfides, Group IV sulfides, alkali metal thiosulfates, alkaline earth metal thiosulfates, iron thiosulfates, alkali metal dithionites and mixtures thereof, which react with said soluble mercury to convert it to insoluble mercury compounds and substantially inhibit its removal by elution from said deposits.

4,354,943

CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 781,625, Mar. 28, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 950,974

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—727 **2 Claims**

1. A process for the removal of suspended carbonaceous material from an aqueous ammonium polyphosphate solution wherein (i) said solution contains from about 10 to about 90% by weight of the total P_2O_5 in a polyphosphate form, (ii) said solution has a pH above about 4.5, (iii) said solution is prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid, (iv) said solution ranges in grade from about 8-27-0 to about 13-37-0, and (v) said carbonaceous material results from organic impurities in said wet-process phosphoric acid which char during said molecular dehydration, which process comprises the steps of:

(a) mixing said ammonium polyphosphate solution with an aqueous solution of a polyvinyl imidazoline bisulfate having a high charge density and a molecular weight in excess of one million, wherein the amount of said polyvinyl imidazoline bisulfate is from about 0.001 to about 0.5% by weight based on the weight of said ammonium polyphosphate solution, and wherein said aqueous polyvinyl imidazoline bisulfate solution contains from about 0.1 to about 5% by weight of said polyvinyl imidazoline bisulfate;

(b) holding the resulting mixture for a period of time effective to permit the separation of said mixture into an upper layer of flocculated carbonaceous material and a lower layer of clarified ammonium polyphosphate solution; and

(c) separating said lower layer of clarified ammonium polyphosphate solution from said upper layer of flocculated carbonaceous material.

4,354,944

CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

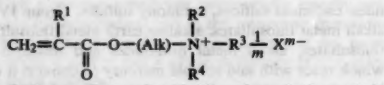
Continuation-in-part of Ser. No. 950,974, Oct. 13, 1978, which is a continuation-in-part of Ser. No. 781,625, Mar. 28, 1977, abandoned. This application Apr. 6, 1981, Ser. No. 251,295

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—727 **10 Claims**

1. A process for the removal of suspended carbonaceous material from an aqueous ammonium polyphosphate solution wherein (i) said solution contains from about 10 to about 90% by weight of the total P_2O_5 in a polyphosphate form, (ii) said solution has a pH above about 4.5, (iii) said solution is prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid, (iv) said solution ranges in grade from about 8-27-0 to about 13-37-0, and (v) said carbonaceous material results from organic impurities in said wet-process phosphoric acid which char during said molecular dehydration, which process comprises the steps of:

(a) mixing said ammonium polyphosphate solution with an aqueous solution of a cationic homopolymer,



wherein said homopolymer is poly(β-methacryloyloxyethyltrimethylammonium methyl sulfate) having a molecular weight in excess of about 10,000, and wherein the amount of said homopolymer is effective to promote the flocculation of said carbonaceous material and said mixing is carried out at a temperature in the range from about 35° to about 200° F.;

(b) holding the resulting mixture at a temperature in the range from about 35° to about 200° F. for a period of time effective to permit the separation of said mixture into an upper layer of flocculated carbonaceous material and a lower layer of clarified ammonium polyphosphate solution; and

(c) separating said lower layer of clarified ammonium polyphosphate solution from said upper layer of flocculated carbonaceous material.

4,354,945

CLARIFICATION PROCESS WITH THIAZINE QUATERNARY AMMONIUM SALTS OF POLYEPIHALOHYDRIN

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,036, Apr. 23, 1979, Pat. No. 4,316,007. This application Jun. 9, 1981, Ser. No. 271,894

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—736 **7 Claims**

1. A process of clarifying aqueous systems containing suspended particles of matter which comprises adding to such systems a thiazine quaternary ammonium salt of polyepihalohydrin wherein the nitrogen atom of the thiazine moiety is attached to the polymeric chain through a —CH_2— group in an amount sufficient to clarify said aqueous system, and flocculating said suspended particles of matter to clarify said aqueous system.

4,354,946

OIL RECONDITIONING APPARATUS AND METHOD

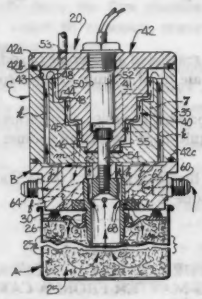
Frank M. Warlick, 7126 Hopeton Rd., Charlotte, N.C. 28210, and Carl J. Eloff, Catawba, S.C., assignors to Frank M. Warlick, Charlotte, N.C.

Filed Jul. 22, 1981, Ser. No. 285,849

Int. Cl.³ B01D *35/18, 3/28*

U.S. Cl. 210—774 **13 Claims**

1. In an oil reconditioning apparatus for use with an internal combustion engine having a conventional oil filter through which all the oil pumped through the engine flows before the oil is again pumped and recycled through the engine, said reconditioning apparatus having a housing provided with an oil inlet and an oil outlet, said oil inlet being adapted to be connected to the high pressure side of the engine's oil circulating system so as to deliver a stream of pressurized oil to the apparatus, said housing also having a filter chamber containing a filter medium therein, and a vaporization chamber positioned above the filter chamber and having an inlet side communicating with the filter chamber so as to receive filtered oil therethrough from the filter chamber and to vaporize any liquid contaminants within the filtered oil so as to thereby recondition the oil, said vaporization chamber also having an outlet side through which the reconditioned oil gravitates from the vaporization chamber, the combination therewith of oil flow control means for



(a) directing a first portion of the stream of pressurized oil from the engine into said oil filter chamber so that the oil may flow therethrough and into said vaporization chamber thereabove, and for

(b) concurrently directing the remaining portion of the stream of pressurized oil in bypassing relation to said oil filter chamber and said vaporization chamber and out of said oil outlet and back into the engine, and for

(c) directing reconditioned oil from the vaporization chamber into the pressurized unreconditioned portion of the stream of oil that has bypassed the oil filter and vaporization chambers so the reconditioned oil will return to the engine under pressure along with the pressurized unreconditioned portion of the stream of oil.

4,354,947

PROCESS FOR FILTERING SLUDGE-LIKE MATERIALS IN A FILTER PRESS

Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Continuation of Ser. No. 53,387, Jun. 29, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 175,343

Int. Cl.³ B01D *25/30*

U.S. Cl. 210—790 **2 Claims**

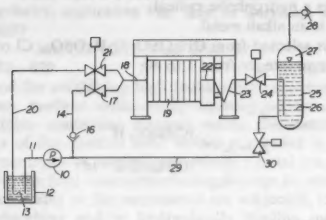
1. A process for the batch-wise filtering of a sludge-like material in a filter press having a pump connected to the filter press for feeding the sludge-like material from a sludge-like material source into the filter press for filtration therein, and having a pressure vessel with an air cushion therein with said vessel being connected selectively to the filter press and to the pump and being periodically filled by the pump with sludge-like material under the pressure of said air cushion, with this sludge-material being stored in said vessel and fed into the filter press at the beginning of a filtering batch, each batch comprising the following steps in the sequence named:

(a) loading said filter press with at least a portion of said

sludge-like material being stored under pressure in said pressure vessel,

(b) conveying sludge-like material by said pump from said sludge-like material source into the filter press for filtration therein, with the connection between said filter press and said pressure vessel being closed at least during the final stage of the filtration step,

(c) closing the connection between said pump and said filter



press and opening the connection between said pump and said pressure vessel while continuously running said pump to convey sludge-like material directly from said source into said pressure vessel, and

(d) opening said filter press and discharging filter cake therefrom while continuing to supply sludge-like material to said pressure vessel with the connection between said pump and said filter press closed and the connection between said pump and said pressure vessel open.

4,354,948

LUBRICATING VARNISHES HAVING A GRAPHITE FLUORIDE BASE AND METHOD OF PREPARING SAME

Elisabeth Schoch, Sonchamp, and Michel Rebiffe, Houilles, both of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Oct. 17, 1980, Ser. No. 197,944

Claims priority, application France, Nov. 13, 1979, 79 27887

Int. Cl.³ C10M *7/04*

U.S. Cl. 252—22 **9 Claims**

1. A process for preparing graphite fluoride lubricating varnishes which comprises (a) mixing a graphite fluoride powder with glycerine, (b) separately forming an aqueous dispersion of graphite fluoride with a salt of a condensate of naphthalene sulfonic acid and formol and then (c) intermixing (a) and (b) to form an aqueous dispersion in which the total amount of graphite fluoride and glycerine is in a weight ratio of between about 0.3 to 1 and the condensate is present in a sufficient amount to stabilize the dispersion.

7. An aqueous graphite fluoride lubricating composition comprising a graphite fluoride powder and glycerine having a total graphite fluoride/glycerine ratio of between about 0.3 to 1 and a salt of a condensate of naphthalene sulfonic acid and formol in a sufficient amount to stabilize the composition.

4,354,949

HYDRAULIC FLUID, HYDRAULIC EQUIPMENT CONTAINING THIS FLUID AND A CONCENTRATE OF THIS FLUID

Carl A. Eggers, Tarvin-near Chester, and Gerald D. Galvin, Upton-by-Chester, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 21, 1981, Ser. No. 226,675

Claims priority, application United Kingdom, Jan. 24, 1980, 8002478

Int. Cl.³ C10M *3/04, 3/10, 3/16, 3/22*

U.S. Cl. 252—39 **21 Claims**

1. A hydraulic fluid which is an oil-in-water emulsion and comprises from 90–99% w of water, from 0.5–5% w of a lubricating oil with a kinematic viscosity at 40° C. of at least 300 cS, and 10–80% w of the amount of oil of at least one non-ionic emulsifier.

14. A hydraulic fluid according to claim 1 which comprises at least one anti-rust additive.

16. A hydraulic fluid according to claim 14 which comprises an overbased calcium salt of an alkyl salicylic acid.

4,354,950

MANNICH BASE DERIVATIVE OF HYDROXYARYL SUCCINIMIDE AND HYDROCARBON OIL COMPOSITION CONTAINING SAME

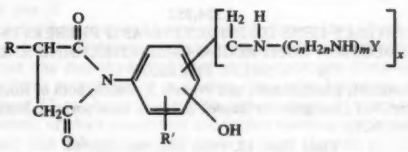
Kenneth G. Hammond, Poughkeepsie, and Garren E. Maas, Wappinger Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,071

Int. Cl.³ C10M *1/32*

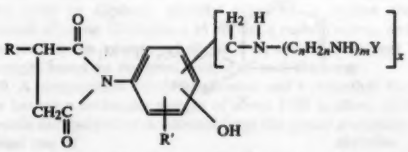
U.S. Cl. 252—51.5 A **13 Claims**

1. A Mannich base derivative of a hydroxyaryl succinimide represented by the formula:



in which R is a hydrocarbyl radical having from about 25 to 200 carbon atoms, R′ is hydrogen, an alkyl radical or a halogen radical, n has a value of 2 or 3, m has a value from 1 to 5, Y is hydrogen or a methylene hydroxyaryl succinimide radical, and x has a value of 1 to 2 when Y is hydrogen and a value of 1 when Y is a methylene hydroxyaryl succinimide radical.

7. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a Mannich base derivative of a hydroxyaryl succinimide represented by the formula:



in which R is a hydrocarbyl radical having from about 25 to 200 carbon atoms, R′ is hydrogen, an alkyl radical or a halogen radical, n has a value of 2 or 3, m has a value from 1 to 5, Y is hydrogen or a methylene hydroxyaryl succinimide radical, and x has a value of 1 to 2 when Y is hydrogen and a value of 1 when Y is a methylene hydroxyaryl succinimide radical.

4,354,951

MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES

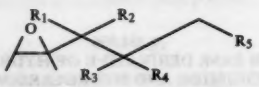
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 18, 1982, Ser. No. 350,091

Int. Cl.³ B32B *33/00*; D04H *1/40*

U.S. Cl. 252—8.9 3 Claims

1. A process for augmenting or enhancing the aroma of a fabric treated with a fabric softener composition or a fabric softener article comprising the steps of adding to a fabric softener composition or a component of a fabric softener article a quantity of at least one epoxide compound defined according to the structure:



wherein R_1, R_2, R_3, R_4 and R_5 are the same or different and each represents hydrogen or methyl with the proviso that (i) the sum total of carbon atoms in R_1, R_2, R_3, R_4 and R_5 is three, and (ii) R_1 and R_2 represent hydrogen when R_5 represents methyl, and (iii) when either R_1 or R_2 is methyl, R_5 is hydrogen, whereby the aroma of the fabric softened using said fabric softener composition or fabric softener article is augmented or enhanced.

4,354,952

CONTACT LENS DISINFECTING AND PRESERVING SOLUTION COMPRISING CHLORHEXIDINE AND SALTS THEREOF

Thomas M. Riedhammer, and Francis X. Smith, both of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

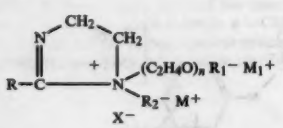
Filed Mar. 12, 1981, Ser. No. 242,964

Int. Cl.³ C11D *1/84, 3/48*

U.S. Cl. 252—106 10 Claims

1. An aqueous solution for preserving and/or disinfecting soft contact lenses having as the active antimicrobial agent a combination 0.0005 to 0.01 weight percent of said composition chlorhexidine or salt thereof, 0.0035 to 0.04 weight percent of said composition of amphoteric surfactant and 0.002 to 15 weight percent of said composition of a nonionic surfactant having a hydrophiliclipophile balance between 12.4 and 18.8, said amphoteric surfactant being selected from the group consisting of:

(1)



wherein

R is a fatty acid radical having 6 to 18 carbon atoms

R_1 is H or $—CH_2C(O)O$ provided that when R_1 is H then M_1 is absent

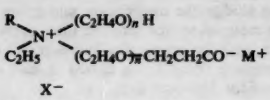
R_2 is $—CH_2C(O)O$ or $CH(OH)CH_2SO_3$

M and M_1 are cation salt forming groups

X is OH or the acid group of an anionic surfact active agent

n is an integer from 1 to 40;

(2)



wherein

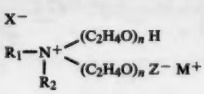
R is a hydrophobe radical

M is an alkali metal

X is selected from CH_3OSO, $C_2H_5OSO_3$, Cl or Br

n is an integer from 1 to 40;

(3)



wherein

R_1 is a fatty acid or hydrophobe radical

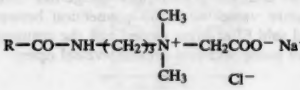
R_2 is alkyl or substituted alkyl

Z is sulfate or sulfonic

M is alkali metal

X is CH_3OSO_3, $C_2H_5OSO_3$, Cl or Br; or

(4)



wherein

R is alkylene of 12–13 carbon atoms,

said nonionic surfactant being selected from polyethylene glycol esters of fatty acids, polyoxyethylene ethers of higher alkanes and polyoxypropylene ethers of higher alkanes.

4,354,953

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS USING 1-N-BUTOXY-1-ETHANOL ACETATE

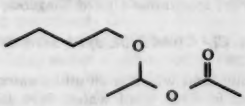
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 217,810, Dec. 18, 1980, Pat. No. 4,296,137, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1970, Pat. No. 4,296,138. This application Jul. 29, 1981, Ser. No. 287,891

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 1 Claim

1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting, modifying or enhancing quantity of 1-n-butoxy-1-ethanol acetate having the structure:



4,354,954

METHOD FOR SOLIDIFYING AQUEOUS RADIOACTIVE WASTES FOR NONCONTAMINATING STORAGE

Rainer Köster, Karlsruhe; Knut Scheffler, Eggenstein-Leopoldshafen, and Ulrich Riege, Linkenheim-Hochstetten, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,534

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819085

Int. Cl.³ G21F 9/08, 9/12, 9/16

U.S. Cl. 252—629 20 Claims

1. Method for solidifying high radioactivity aqueous waste concentrates, medium radioactivity aqueous wastes concentrates, actinide containing aqueous waste concentrates, or suspensions of fine-grained solid wastes suspended in water, which concentrates or suspensions contain a metal ion and/or metal oxide, for final noncontaminating storage in which the waste concentrates or the suspensions are subjected, together with an absorbing and/or hydraulically binding inorganic material, to a ceramic firing process so as to produce a solid sintered body comprising the steps of:

(a) treating the waste concentrates or suspensions by evaporation, to form an evaporate having a water content in the range between 40 and 80 percent by weight and a solid content whose metal ion and/or metal oxide concentration lies between 10 and 30 percent by weight of the evaporate being formed, and adjusting the pH of the evaporate to between 5 and 10;

(b) pelletizing by spraying 1 part by weight of the evaporate obtained from step (a) onto 2 to 6 parts by weight of a mixture containing a clay-like substance disposed on a moving pelletizing plate, to form pellets said mixture further containing (1) 10% to 90% cement based on the total weight of the clay-like substance and cement, or (2) an effective amount of at least one suppressing additive, or (3) mixtures thereof, the suppressing additive being an additive for suppressing the volatility of alkali metals or alkaline earth metals and/or an additive for suppressing the volatility of any decomposable anions selected from the group consisting of sulfate, phosphate, molybdate and uranate ions which may be present in the evaporate,

(c) heat treating said pellets including drying at temperatures between room temperature and 150° C., calcining at temperatures up to 800° C., and subsequently firing at temperatures between 800° C. and 1400° C. to form practically undissolvable mineral phases; and

(d) enclosing said pellets containing the fired mineral phases on all sides in a dense, continuous ceramic or metallic matrix.

4,354,955

PROCESS AND APPARATUS FOR PRODUCING PROPELLANT OF REDUCED COMBUSTIBILITY

Augustinus J. M. Wittenhorst, Westerburg, Fed. Rep. of Germany, assignor to von TREU AG, Switzerland

Division of Ser. No. 929,199, Jul. 28, 1978, Pat. No. 4,233,177. This application May 14, 1980, Ser. No. 149,688

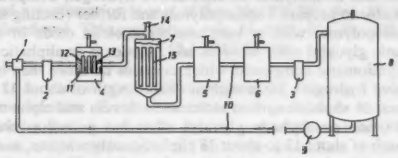
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734490

Int. Cl.³ C09K 3/30; B01F 3/20; B01J 13/00

U.S. Cl. 252—305 11 Claims

1. A process for producing a propellant having as the predominant component at least one liquified hydrocarbon of the group consisting of propane, butane and isobutane and 2 to 20 weight % of at least one chlorohydrocarbon of the group consisting of dichloromethane and 1,1,1-trichloroethane comprising passing hydrocarbon liquified under pressure having an industrial degree of purity first through a coarse filter to separate oily impurities and then passing the purified hydrocarbon through a fine filter to remove odor causing impurities while simultaneously feeding into the hydrocarbon the chlorohydrocarbon and mixing them together, subsequently trickling the mixture, filtering it and collecting it.

8. An apparatus for carrying out the process of claim 1 comprising in order in the direction of flow (1) feeding means, (2) coarse filtering means, (3) fine filtering means, (4) gas sterilization filtering means, (5) a pair of additional fine filtering



means, (6) a pressure container, (7) pumping means on the outlet side of said pressure container and a pressure line connecting (1), (2), (3), (4), (5), (6) and (7), means for supplying chlorohydrocarbon to each of said fine filtering means at the tops thereof and means for supplying inert gas to the gas sterilization filtering means.

4,354,956

THICKENING AQUEOUS SYSTEMS WITH ALPHA-OLEFIN OXIDE-MODIFIED LIQUID POLYETHER THICKENERS

Ronald L. Camp, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 86,837, Oct. 22, 1979, Pat. No. 4,288,639. This application Jul. 21, 1980, Ser. No. 170,498

Int. Cl.³ B01J 13/00; C09K 5/00

U.S. Cl. 252—316 12 Claims

1. The process of thickening aqueous systems comprising the addition of an effective thickening amount of a liquid polyether thickener having a molecular weight of about 1000 to about 25,000 to said aqueous systems, said polyether consisting of at least one of

(A) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one monohydric alcohol active hydrogen compound initiator containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether each having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

(B) polyethers prepared by reacting ethylene oxide with at least one monohydric alcohol active hydrogen compound initiator to prepare a homopolymer and further reacting said homopolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether wherein said initiator is an aliphatic or alkylaromatic compound which contains no more than one active hydrogen, has a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether has a carbon chain length of about 12 to about 18 aliphatic carbon atoms, and is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener.

10. A composition comprising water and a polyether thickener having a molecular weight of about 1000 to about 25,000 wherein said polyether is selected from the group consisting of at least one of

(A) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one monohydric alcohol active hydrogen compound initiator containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide or aliphatic glycidyl

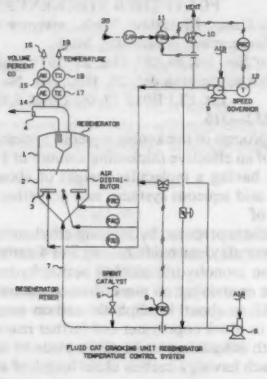
ether each having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

(B) polyethers prepared by reacting ethylene oxide with at least one monohydric alcohol active hydrogen compound initiator to prepare a homopolymer and further reacting said homopolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether wherein said initiator is an aliphatic or alkylaromatic compound which contains no more than one active hydrogen, has a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether has a carbon chain length of about 12 to about 18 aliphatic carbon atoms, and is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener.

4,354,957
REGENERATOR TEMPERATURE CONTROL

Harold J. Swindell, Kansas City, and Randall G. Thompson, Odessa, both of Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 3, 1980, Ser. No. 193,870
Int. Cl.³ B01J *29/38, 21/20;* **C10G** *11/18;* **C06G** *7/58*
U.S. Cl. 252—419 **9 Claims**



FLUID CAT CRACKING UNIT REGENERATOR TEMPERATURE CONTROL SYSTEM

1. A regenerator control process wherein the flow of the free oxygen containing gas into a regeneration zone is controlled responsive to the temperature in the dilute phase of the regeneration zone, said process comprising

(a) determining the amount of combustibles on the cracking catalyst particles in the regeneration zone and generating a combustibles signal responsive thereto.

(b) automatically comparing said combustibles signal and a combustibles set point to generate a switch signal,

(c) manipulating the flow of said free oxygen containing gas into said regeneration zone under a first regeneration control mode when said switch signal represents an amount of combustibles at or above said combustibles set point and manipulating the flow of said free oxygen containing gas into said regeneration zone under a second regeneration control mode when said switch signal represents an amount of combustibles below said combustibles set point,

said first regeneration control mode being characterized by

(aa) generating a temperature signal representative of the temperature in the dilute phase of the generator

(bb) automatically comparing said temperature signal with a temperature set point,

(cc) reducing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature in excess of the temperature set point,

(dd) increasing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature in the dilute phase below said temperature set point,

said second regeneration control mode being characterized by

(aa) generating a temperature signal representative of the dilute phase temperature,

(bb) automatically comparing said temperature signal with a temperature set point signal, and

(cc) reducing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature below said temperature set point.

2. Process in accordance with claim 1 wherein said combustibles signal and said dilute phase temperature signal are automatically converted in a computer to one control signal used to manipulate the flow of free oxygen containing gas into the regenerator.

3. Process in accordance with claim 1 wherein said combustibles signal is generated by measuring the carbon monoxide content in the flue gas in the dilute phase and wherein said first control mode is utilized when the carbon monoxide is equal to or above a given set point and wherein the second control mode is used when the carbon monoxide content is below a set point.

4,354,958
FIBRILLATED MATRIX ACTIVE LAYER FOR AN ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,578
Int. Cl.³ C25B *11/06, 11/02*
U.S. Cl. 252—425.3 **5 Claims**

1. A method of preparation of matrix active layer for an electrode comprising intimately mixing carbon black particles having a particle size of from about 50 to about 3000 Angstroms and having a surface area of from about 25 to about 300 square meters per gram, with an aqueous dispersion of fibrillatable polytetrafluoroethylene particles; said mixture containing from 65 to about 75 percent carbon black particles and 25 to 35 percent polytetrafluoroethylene by weight; drying said mixture at temperatures in the range from about 250° to 325° C. from 10 to about 90 minutes; combining the thus dried PTFE/-carbon black particulate component with deashed active carbon catalyst particles to form an intimate mix said catalyst particles amounting from between 40 to 80 weight percent of the entire mix; fibrillating said intimate mix and forming said fibrillated mixture into an active layer containing active carbon particles present within a network of carbon black and fibrillated polytetrafluoroethylene.

4,354,959
CATALYST FOR POLYMERIZING OLEFINS

Ronald A. Epstein, and Robert I. Mink, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 3, 1981, Ser. No. 289,446
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **44 Claims**

1. A catalytic system for polymerizing olefins comprising:

(a) a component containing an organoaluminum compound, and

(b) a component containing a titanium halide obtained by:

(i) copulverizing a magnesium compound containing halogen compound or manganese compound containing halogen with at least one electron-donor compound to produce a copulverized product,

(ii) treating the copulverized product with an ether to produce a treated product, and

(iii) reacting the treated product with a titanium halide compound.

4,354,960

PROCESS FOR THE PRODUCTION OF BORON-CONTAINING NICKEL-ALUMINUM OXIDE CATALYSTS

Hans Hammer, An Adamshäuschen 3, and Heinz Jacobi, Jacobstr. 184, both of 5100 Aachen, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,825

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907943

Int. Cl.³ B01J *21/02*

U.S. Cl. 252—432 9 Claims

1. A process for the production of boron-containing nickel-aluminum oxide catalysts, comprising the steps of reacting solutions containing nickel and aluminum, with aqueous sodium borohydride and forming a precipitate while cooling to about 0° C., and maintaining a pH value of about 7 to 10, and drying and compressing the resultant precipitate into catalyst shapes.

4,354,961

METHOD OF PREPARING A CATALYST FOR SYNTHESIZING UNSATURATED ESTERS

Setsuo Kamiyama, Kawagoe; Kouji Shiozawa, Hatoyama; Eiichiro Nishikawa, and Katsumi Kaneko, both of Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,166

Claims priority, application Japan, Jan. 24, 1980, 55-6331

Int. Cl.³ B01J *27/02, 21/18, 29/16, 29/00*

U.S. Cl. 252—439 4 Claims

1. A method of preparing a catalyst for synthesizing unsaturated esters, comprising:

supporting on activated carbon a compound of palladium applied in the form of a solution in an organic solvent containing a mineral acid; then

supporting on said carrier at least one element selected from the group of tellurium and tin or a compound thereof, applied in the form of a solution in an organic solvent; and

treating the catalyst so prepared to reduce its metal components.

4,354,962

METHOD FOR PREPARING A HYDROCARBON CONVERSION CATALYST

Georges Szabo, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Continuation of Ser. No. 45,623, Jun. 5, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,378

Claims priority, application France, Jun. 5, 1978, 78 16755

Int. Cl.³ B01J *21/04, 21/06, 23/62, 27/08*

U.S. Cl. 252—442 12 Claims

1. In a method for the preparation of a hydrocarbon conversion catalyst comprising zirconium deposited on a refractory oxide mineral carrier comprised of alumina, the improvement in said method comprising impregnating said carrier with a solution of at least one complex zirconium ion, the latter having been formed by means of at least one organic acid selected from the group consisting of oxalic acid and/or its salt, the impregnating zirconium solution having a ratio of concentration of oxalic acid ions to the concentration of zirconium-containing ions of at least fifteen, the zirconium ion concentration of the solution being between M/10 and M/100, then drying the zirconium-impregnated solid between 100° and 300° C. and thereafter calcining said solid at between 400° and 700° C.

4,354,963

CONVERSION OF SYNTHESIS GAS WITH IRON-CONTAINING CATALYST

Stephen A. Butter; Arthur W. Chester, both of Cherry Hill, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 120,243, Feb. 11, 1980, Pat. No. 4,298,695, and a continuation-in-part of Ser. No. 970,300, Sep. 18, 1978, abandoned. This application Apr. 24, 1981, Ser. No. 257,301

Int. Cl.³ B01J *29/30*

U.S. Cl. 252—455 Z 13 Claims

1. A catalyst composition prepared by forming a homogenous mixture of either metallic iron powder or iron oxide powder having a particle size no greater than about 200 microns, a hydrogel matrix and an acidic crystalline aluminosilicate zeolite having a silica-to-alumina ratio of at least 12, a pore size greater than about 5 Angstrom units, and a constraint index of about 1 to 12, drying said mixture and treating it with carbon monoxide or synthesis gas mixtures containing carbon monoxide at elevated temperatures.

4,354,964

CERMET MATERIALS

Peter Hing, Birstall, and Ronald Kay, East Goscote, both of England, assignors to Thorn Emi Limited, London, England

Filed Nov. 10, 1980, Ser. No. 205,094

Claims priority, application United Kingdom, Nov. 12, 1979, 7939090

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 12 Claims

1. An electrically conducting cermet comprising a sintered compact of granules of refractory oxide selected from the group consisting of aluminum oxide, yttrium oxide and a spinel, said granules having diameters of from 50 to 800 microns, said granules being dispersed within a conductive network extending throughout the cermet, wherein said conductive network is constituted by a layer of particles surrounding said granules, said particles being of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, iron, cobalt and nickel, and being of a particle size of from 0.1 to 12 microns, said layer constituting a volume fraction of from 0.04 to 0.2 of the total cermet, wherein there is dispersed, within the refractory oxide granules, (a) particles of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, iron, cobalt and nickel, of a particle size of from 0.1 to 15 microns and in a volume fraction of from 0.01 to 0.15 of the total volume of the granules, and (b) from 0.01 to 0.25 percent by weight of the refractory oxide of finely divided magnesium oxide.

4,354,965

POLYETHERAMIDEIMIDE RESINS AND ELECTRICAL CONDUCTORS INSULATED THEREWITH

Yue-Guey L. Lee, and Otto S. Zamek, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 138,198, Apr. 7, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,039

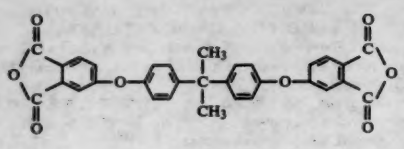
Int. Cl.³ C08G *18/00*

U.S. Cl. 524—104 30 Claims

1. A high molecular weight polyetheramideimide resin prepared by subjecting

(A) a combination of anhydrides comprising:

(i) from 1 to 99 parts by weight of a dianhydride of the formula



or a mixture thereof with at least one other dianhydride of an organic tetracarboxylic acid, and

(ii) from 99 to 1 parts by weight of a tribasic acid anhydride, and

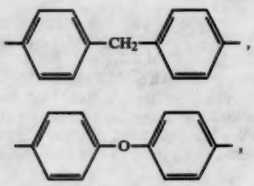
(B) 0.99 to 1.01 moles, per mole of the anhydride, of a difunctional organic nitrogen compound of the formula

(i) O=C=N—R—N=C=O,

(ii) H_2N—R—NH_2, or

(iii) a mixture of (i) and (ii), wherein

R is divalent alkylene of 2 to 20 carbon atoms,



or a mixture thereof, to polycondensation at a temperature of about 60° to 200° C. in the presence of an inert solvent.

4,354,966

PEPTIDES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitsura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi; Matsuhiko Aratani, both of Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka, and Masashi Hashimoto, both of Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

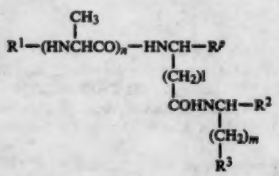
Filed Oct. 3, 1980, Ser. No. 193,453

Claims priority, application United Kingdom, Oct. 11, 1979, 7935401; Oct. 15, 1979, 7935730; Oct. 17, 1979, 7936000; Mar. 28, 1980, 8010459

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:

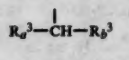


wherein

R^1 is hydrogen or acyl;

R_2 is carboxy or protected carboxy or a group of the formula: —COHN—R_a^2 wherein R_a^2 is carboxy(lower-)alkyl or protected carboxy(lower)alkyl;

R^3 is carboxy, protected carboxy, lower alkyl, hydroxyphenyl, carbamoyl or a group of the formula:



wherein R_a^3 is hydrogen, amino, protected amino or a cylamino, R_b^3 is carboxy or protected carboxy;

R^p is carboxy, protected carboxy, carbamoyl, carboxy(lower)alkyl or protected carboxy(lower)alkyl;

l is an integer 2,

m is an integer 0 to 2 and

n is an integer 1,

provided that,

when R^p is carbamoyl, then R^1 is acyl.

4,354,967

ANTIGENIC LINEAR PEPTIDE COMPOUND

Erwin Goldberg, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jun. 26, 1981, Ser. No. 277,623

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **2 Claims**

1. The antigenic linear peptide compound having the formula: N-Ser-Leu-Asn-Pro-Ala-Ile-Gly-Thr-Asp-Lys-C wherein N-Ser is N-terminal serine and Lys-C is C-terminal lysine, and Leu, Asn, Pro, Ala, Ile, Thr, and Asp are the L-Amino acid forms, respectively of leucine, asparagine, proline, alanine, isoleucine, threonine, and aspartic acid. and Gly is glycine.

4,354,968

AZO REACTIVE DYESTUFFS HAVING AN ARYL-TRIAZINYL-ARYL DIAZO COMPONENT

Erich Krämer; Horst Nickel, both of Leverkusen, and Karl-Heinz Schündehütte, Opladen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

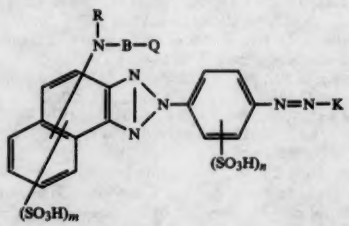
Continuation of Ser. No. 827,374, Aug. 24, 1977, abandoned, which is a continuation of Ser. No. 335,247, Feb. 23, 1973, abandoned. This application Mar. 26, 1979, Ser. No. 23,750

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1972, 2208972

Int. Cl.³ C09B *45/00, 45/24, 29/22*

U.S. Cl. 260—146 T **2 Claims**

1. Metal-free or metalized azo dyestuff which in the form of the free acid has the formula



wherein

K is the radical of a coupling component of the acetoacetic acid arylide, pyrazolone or pyrimidone series;

Q is fiber-reactive radical of the pyrimidine, triazine or quinoxaline series;

B is a direct bond, —CO— or —SO_2—;

R is H or C_1–C_4-alkyl;

m is 0, 1 or 2; and

n is 0, 1 or 2.

4,354,969

DYE MIXTURES

Georg Henning; Bertold Honigmann, both of Ludwigshafen, and Gunther Lamm, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

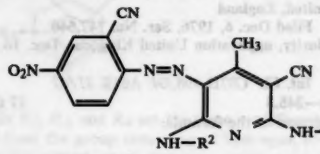
Filed Jun. 30, 1980, Ser. No. 163,946

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929848

Int. Cl.³ C07C *107/00*; C09B *29/36*

U.S. Cl. 260—156 3 Claims

1. A dye mixture which contains dyes of the formula I



where R^1 and R^2 have the following meanings:

Dye	R^1	R^2
1	C_2H_4OH	$(CH_2)_3OC_2H_4OC_6H_5$
2	$(CH_2)_3OC_2H_4OC_6H_5$	C_2H_4OH
3	$(CH_2)_3O(CH_2)_4OH$	H
4	H	$(CH_2)_3O(CH_2)_4OH$.

4,354,970

INDOLINE COUPLED ISOTHIAZOLE AZO DYES

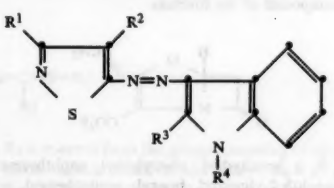
Jean C. Fleischer; Gary T. Clark, and Max A. Weaver, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,209

Int. Cl.³ C07C *107/00*; C09B *29/039, 29/36*

U.S. Cl. 260—158 2 Claims

1. A compound having the formula:



wherein R^1 and R^2 are each selected from cyano, formyl, lower alkoxycarbonyl, lower alkylsulfonyl, thiocyanato, carbamoyl, lower alkylcarbamoyl, and lower alkanoyl, and one of R^1 and R^2 is also selected from lower alkyl; and R^3 and R^4 are each selected from hydrogen, lower alkyl, benzyl and phenyl.

4,354,971

NON-EXTRACTIVE PENICILLIN V RECOVERY PROCESS

John M. Edmundowicz, Carmel, and Ernest E. Allanson, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1981, Ser. No. 276,446

Int. Cl.³ C07D *499/18, 499/20, 499/16*; C07C *51/50*

U.S. Cl. 260—239.1 14 Claims

1. A method for recovering penicillin V acid from penicillin V-containing fermentation broth which comprises:

a. adjusting said broth of a pH of between about 4.0 and about 4.3 while maintaining the temperature of the broth in the range from about 15° to about 30° C.;

b. separating the acidified liqid phase from insolubles; and

c. acidifying the liquid phase to a pH of between about 2.0 and about 2.5.

4,354,972

SYNTHESIS OF STEROIDS

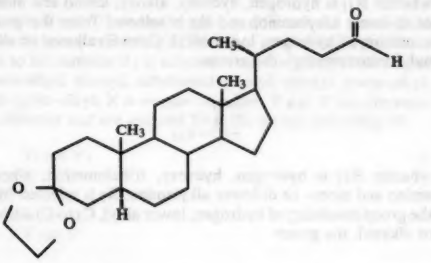
Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

Continuation-in-part of Ser. No. 236,160, Feb. 20, 1981, abandoned, and Ser. No. 278,838, Jun. 29, 1981. This application Aug. 10, 1981, Ser. No. 291,435

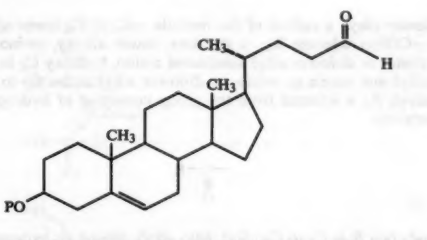
Int. Cl.³ C07J *71/00*

U.S. Cl. 260—239.55 R 24 Claims

6. A steroid 24-aldehyde having the structure:



7. A steroid 24-aldehyde having the structure:



in which P is 2-tetrahydropyranyl, t-butyloxycarbonyl, trimethylsilyl, or dimethyl-t-butylsilyl.

4,354,973

PYRROLO[3,4-d][2]BENZAZEPINES

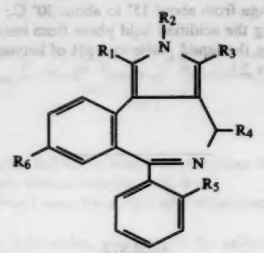
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 175,555, Aug. 5, 1980. This application Jul. 23, 1981, Ser. No. 286,124

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.7 11 Claims

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, hydroxymethyl, the group

wherein R_{11} is hydrogen, hydroxy, alkoxy, amino and mono- or di-lower alkylamino; and R_3 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, hydroxymethyl, the group

wherein R_{11} is hydrogen, hydroxy, trihalomethyl, alkoxy, amino and mono- or di-lower alkylamino; R_2 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, the group

lower alkyl, a radical of the formula $-C_1$ to C_6 lower alkyl $-COR_{21}$ wherein R_{21} is hydroxy, lower alkoxy, amino or mono- or di-lower alkyl substituted amino, hydroxy C_2 to C_7 alkyl and amino or mono- or di-lower alkyl amino C_2 to C_7 alkyl; R_4 is selected from the group consisting of hydrogen, acyloxy

wherein R is C_1 to C_6 alkyl, halo alkyl, phenyl or hydrogen, straight chain lower alkoxy and hydroxy; R_5 is halogen or hydrogen; R_6 is halogen with the proviso that if one of R_1 or R_3 is hydroxymethyl or the group

wherein R_{11} is as above then the remaining substituent is selected from the group consisting of hydrogen, lower alkyl and C_3 to C_7 alkenyl or alkynyl, and R_2 is hydrogen and the further proviso that (A) when R_4 is acyloxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl, and R_2 is the group

lower alkoxy, (B) when R_4 is hydroxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl, and R_2 is hydrogen or (C) when R_4 is alkoxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl,

and the pharmaceutically acceptable salts thereof.

4,354,974

CLAVUDIENES

Irene Stirling, Worcester Park, England, assignor to Beecham Group Limited, England

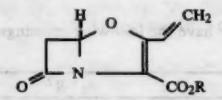
Filed Dec. 6, 1976, Ser. No. 747,640

Claims priority, application United Kingdom, Dec. 16, 1975, 51516/75

Int. Cl.³ C07D *498/04;* A61K *31/42*

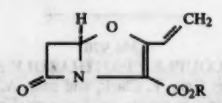
U.S. Cl. 260—245.3 **17 Claims**

1. A compound of the formula:



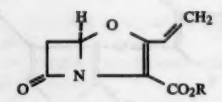
wherein R is unsubstituted alkyl, alkenyl or alkynyl of not more than 16 carbon atoms.

4. A compound of the formula:



wherein R is alkyl containing a total of not more than 16 carbon atoms substituted by up to 3 halo atoms, or mono-substituted by alkoxy of up to 6 carbon atoms, hydroxy, alkylamino of up to 6 carbon atoms or dialkylamino of up to 6 carbon atoms in each alkyl group.

8. A compound of the formula:



wherein R is benzhydryl, phenylethyl, naphthylmethyl, 6-methoxynaphth-2-ylmethyl, benzyl, p-nitrobenzyl, p-chlorobenzyl, p-methoxybenzyl, p-bromobenzyl or m-chlorobenzyl.

4,354,975

PROCESSES FOR MAKING PHOSPHORUS DERIVATIVES OF AMINOTHIOMETHYLCARBAMATES

Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

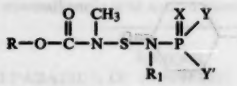
Continuation of Ser. No. 43,277, Jun. 1, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,342

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.³ C07D *307/88;* C07F *9/24*

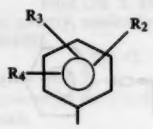
U.S. Cl. 549—220 **51 Claims**

1. A process for preparing a compound having the formula



I

wherein R is selected from the group consisting of:

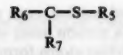


a.

wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and N=CHN$(CH_3)_2$;

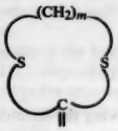
b.

wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, cyano, alkoxy having one to five carbon atoms, inclusive, phenyl, and hydrogen, with the proviso that when A is hydrogen, B is of the formula:



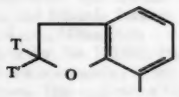
wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula:

wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atoms to which they are attached form a dithio heterocyclic of the formula:



a.

wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and



c.

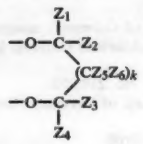
wherein T and T' can be the same or different and are selected from the group consisting of hydrogen and lower alkyl of from one to six carbons; R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cyclo- alkyl; X is oxygen or sulfur; Y and Y' are the same or different and are selected from the group consisting of:

Y_1 and Y'_1 I_1

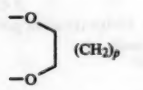
and

Y and Y'

taken together to form a functionality selected from the group consisting of:

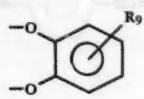


I'



I''

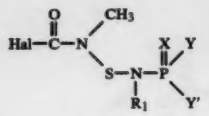
and



I'''

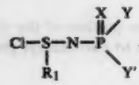
wherein Y_1 and Y'_1 are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy, Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1, p is three or four and R_9 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and halogen; which comprises

step (1) preparing an intermediate having the formula



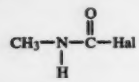
II

in a process wherein a compound having the formula



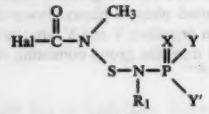
III

is reacted with a compound having the formula



and,

step (2) contacting the intermediate



wherein R_1, X, Y and Y' are as defined above, and Hal is fluorine or chlorine;

with a compound having the formula ROH wherein R is the same as above.

4,354,976

PROCESS FOR THE PREPARATION OF AZIDOBENZAL COMPOUNDS

Michael Römer, Rodgau, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

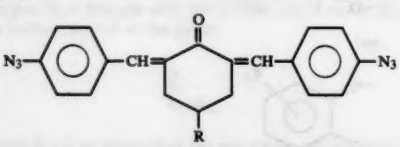
Filed Dec. 19, 1980, Ser. No. 218,250

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951101

Int. Cl.³ C07C *117/00*

U.S. Cl. 260—349 **3 Claims**

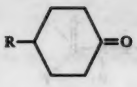
1. A process for preparing a 2,6-bis-((4-azidophenyl)-methylene)-cyclohexanone of the formula



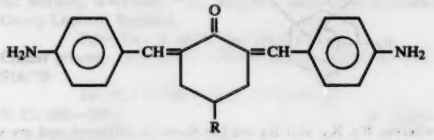
wherein R is hydrogen or alkyl of 1–6 C atoms, comprising

(a) freshly preparing 4-aminobenzaldehyde by reacting 4-nitrotoluene with sodium sulfide and sulfur in aqueous-alcoholic sodium hydroxide solution and removing unreacted 4-nitrotoluene, whereby there is produced 4-aminobenzaldehyde substantially uncontaminated by products of self-condensation;

(b) directly after step (a), condensing the residual 4-aminobenzaldehyde, without purification, with a cyclohexanone of the formula



wherein R is as defined above, in the presence of an alkaline condensing agent, whereby there is prepared a 2,6-bis-((4-aminophenyl)-methylene)-cyclohexanone of the formula



wherein R is as defined above, which is substantially uncontaminated by products derived from the self condensation of 4-aminobenzaldehyde; and

(c) diazotizing the 2,6-bis-((4-aminophenyl)-methylene)-cyclohexanone product and reacting the diazotization product with an alkali metal azide.

4,354,977

PHOSPHONOTHIOATE IMMUNOGENS

Ronald M. Hoskinson, Normanhurst; Ronald I. Cox, Beecroft, and Michael S. F. Wong, North Epping, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

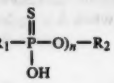
Filed Mar. 11, 1980, Ser. No. 129,450

Claims priority, application Australia, Mar. 15, 1979, PD8046

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.4 **14 Claims**

1. A lower alkyl phosphonothioate of a steroid alcohol or phenolic steroid, having the formula



wherein R_1 is lower alkyl; R_2 is a steroid residue, each phosphonothioyloxy group being joined to a carbon atom of the steroid nucleus other than one of the carbon atoms forming a ring junction, or to a side chain carbon atom; and n is an integer from 1 to 4.

4,354,978

PROCESS FOR PREPARING ALPHA-METHYL MONOBASIC ACID AND ESTERS THEREOF

Orville D. Frampton, Wyoming, and William D. Baugh, Cincinnati, both of Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,954

Int. Cl.³ C11C *3/02, 1/00*

U.S. Cl. 260—410.9 R **13 Claims**

1. A process for preparing alpha-methyl monoalkanoic acid of from 4 to 9 carbon atoms, and/or the monoester thereof, wherein said branched acid and/or ester predominates over any unbranched acid and/or ester which may also be produced, which comprises reacting an alpha- monoolefin of from 3 to 8 carbon atoms, carbon monoxide and water and/or monoalkanol in the presence of a catalytically effective amount of a heterogeneous catalyst composition comprising (i) a zerovalent Group VIII metal or metal alloy in which the Group VIII metal is the major component by weight thereof, (ii) an aryl ligand selected from the group consisting of arylarsine,

arylstibine and arylbismuthine and (iii) a Lewis acid and/or hydrochloric acid to provide a liquid reaction product containing said monoalkanoic acid and/or monoester thereof.

4,354,979

PREPARATION OF ALIPHATIC ISOCYANATES

Volker Schwendemann, Wiesenbach, and Dietrich Mangold, Neckargemuend, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,725

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040692

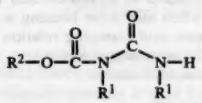
Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P 5 Claims

1. A process for the preparation of an aliphatic isocyanate of the formula

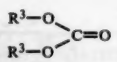
$$R^1\text{-NCO} \qquad \text{I}$$

where R^1 is an aliphatic radical, by thermal cleavage, wherein an N,N'-disubstituted allophanic acid ester of the formula



II

where the R^1 may be identical or different and have the above meanings and R^2 is an aromatic radical derived from an unsubstituted or substituted phenol which is distillable at below 250° C. is thermally cleaved at from 150° to 400° C. in the presence of a diester of carbonic acid, of the formula



III

where the R^3's may be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, or the R^3's together are an unsubstituted or substituted alkylene or phenylene radical.

4,354,980

PROCESS FOR PRODUCING ALKYL XANTHOGEN ALKYLFORMATES

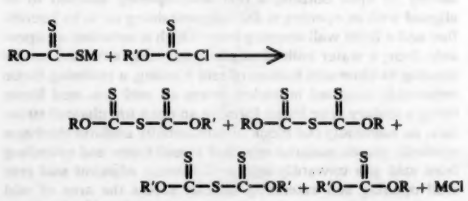
Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

Filed Jun. 4, 1981, Ser. No. 270,363

Int. Cl.³ C07C *154/02*

U.S. Cl. 260—455 B 8 Claims

1. In a process for producing alkyl xanthogen alkyl formates by reaction of an alkaline alkyl xanthate and an alkyl chloroformate according to the generalized reaction:



where R and R' are selected from the group consisting of linear, branched and substituted alkyl groups with one to six carbon atoms and M is an alkali metal, the improvement comprising:

adding soluble calcium salt to an aqueous xanthate solution to provide 2–5% Ca^{++} by weight as $CaCl_2$ compared to xanthate;

adding to said xanthate solution said chloroformate in proportion of 1 mole chloroformate to 1–2 moles xanthate; and

maintaining the reaction temperature in the range of 35° to 60° C., depending on the size of the xanthate alkyl group;

whereby the amount of dialkyl xanthic anhydride produced as a by-product may be controlled within the range of 13–60%.

4,354,981

METHOD FOR SYNTHESIZING DINITRILES, PRODUCTS OBTAINED THEREBY AND THEIR DERIVATIVES

Aldo Prevedello, San Donato Milanese; Maurizio Brunelli, Milan, and Edoardo Platone, Asti, all of Italy, assignors to Anic, S.p.A., Milan, Italy

Division of Ser. No. 113,093, Jan. 17, 1980, Pat. No. 4,279,834, which is a continuation of Ser. No. 899,797, Apr. 27, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,086

Claims priority, application Italy, Apr. 26, 1977, 22806 A/77; Feb. 24, 1978, 20560 A/78

Int. Cl.³ C07C *121/30, 121/20, 121/46*

U.S. Cl. 260—465.8 R 1 Claim

1. 2,3,7-trimethyl-3-cyanomethyl-6-octenenitrile.

4,354,982

PRODUCTION OF ORGANOLITHIUM COMPOUNDS AND LITHIUM HYDRIDE

Borislav Bogdanovic, Mulheim an der Ruhr, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle m.b.H., Mulheim an der Ruhr, Fed. Rep. of Germany

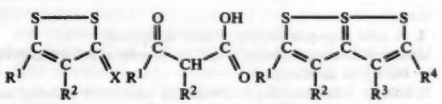
Filed Mar. 4, 1980, Ser. No. 127,011

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908928

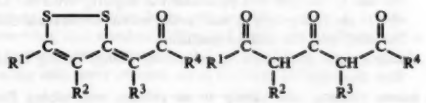
Int. Cl.³ C07F *1/02*

U.S. Cl. 260—665 R 19 Claims

1. A process for the preparation of organolithium compounds and lithium hydride comprising reacting lithium with an α-olefin or an α, w-diolefin in the presence of a catalyst formed by contacting hetero-compounds of the general formula



III IV V



VI VII

in which X is sulfur or oxygen;

R^1, R^2, R^3 and R^4 represent hydrogen, alkyl of up to 20 carbon atoms, cycloalkyl, aralkyl or aryl groups and/or two or more of such groups are closed into an aliphatic or aromatic ring system; or a polycyclic aromatic selected from the group consisting of anthracene, naphthalene, biphenyl with halides of transition metals from group I_b, II_b, IV_b-VII_b and VIII of the periodic system.

4,354,983

PROCESS FOR THE PURIFICATION OF O,O-DIALKYLTHIONOPHOSPHORIC ACID CHLORIDES

Hilmar Roszinski, Kendenich near Cologne, and Heinz Harnisch, Lövenich near Cologne, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hurth Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 862,924, Oct. 1, 1969, abandoned. This application Feb. 4, 1976, Ser. No. 655,076

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1968, 1801432

Int. Cl.³ C07F 9/20

U.S. Cl. 260—990 1 Claim

1. A process for the purification of a dialkylphosphorochloridothionate which comprises:

(a) providing a mixture containing said phosphorochloridothionate and difficult to separate impurities containing sulfur, chlorine and phosphorus associated with the preparation of a dialkylphosphorochloroidothionate by the reaction of a chlorinating agent and a dialkylphosphorodithoic acid, selected from the group consisting of dimethyl and diethyl;

(b) admixing and reacting with said mixture for a period of at least one minute at a temperature between about 0° C. and 75° C. a sufficient amount of said dialkylphosphorodithionic acid to react with at least one of the impurities therein to form more of the phosphorochloridothionate; and

(c) separating and removing the phosphorochloridothionate in a substantially pure state from the impurities in the mixture.

4,354,984

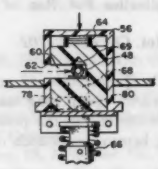
LIQUID LEVEL CONTROLLER FOR A HUMIDIFIER

Gerry D. Richardson, and Joseph A. Cairo, both of Marietta, Ga., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 3, 1981, Ser. No. 289,558

Int. Cl.³ B01F 3/04

U.S. Cl. 261—66 15 Claims



1. A tube clamp assembly which comprises:

an inner housing defining a first transverse slot for receiving tubing to be clamped;

a hollow outer housing surrounding said inner housing and manually movable relative to said inner housing between first and second positions, said outer housing defining a second transverse slot positioned in registry with the first slot in the first position, and spring means to bias said outer housing into the second position;

clamp means positioned to releasably clamp tubing in said first slot; and

means causing said clamp to so release said tubing from clamping relation when said outer housing is in the first position and to actuate said clamping relation when the outer housing is in the second position.

9. In a humidifier for oxygen gas and the like to be administered to a patient for respiratory therapy, a liquid level sensing device for detecting a liquid level in a canister having an optical probe therein, said sensing device comprising a bracket carried by a frame, said brakcet carrying a light source and a light sensing member for determining liquid level in the canister in conjunction with said probe, and a tube clamp for controlling the flow of replacement liquid to the canister mounted in the humidifier, the improvement comprising, in combination:

said bracket defining first and second parallel arms having free ends, hinge means between the parallel arms and frame to permit rotation of said bracket into and out of probe-engaging relation, whereby the canister may be removed and replaced while the bracket is out of probe-engaging relation, the first arm of said bracket being more flexible than the second arm, and snap-fit means adjacent said first arm positioned to mate with corresponding snap-fit means on the frame, to releasably retain said bracket in a position out of probe-engaging relation;

said tube clamp assembly comprising an inner housing defining a first transverse slot for receiving tubing to be clamped;

a hollow outer housing surrounding the inner housing and manually movable relative to said inner housing between said first and second positions, said outer housing defining a second transverse slot positioned in registry with the first slot in the first position, and spring means to bias said outer housing into the second position;

clamp means positioned to releasably clamp tubing in said first slot; and

means causing said clamp means to so release said tubing from clamping relation when said outer housing is in the first position and to actuate said clamping relation when the outer housing is in the second position.

4,354,985

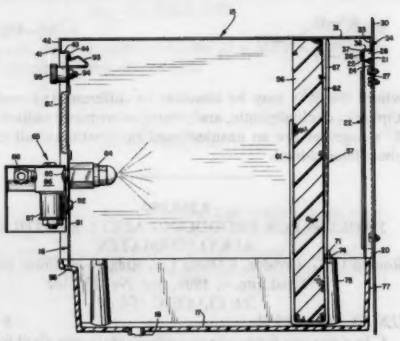
WATER WASH HUMIDIFIER ASSEMBLY

Thomas Johnson, Williamstown, W. Va., assignor to Skuttle Mfg. Co., Marietta, Ohio

Filed Mar. 20, 1981, Ser. No. 246,093

Int. Cl.³ B01F 3/04

U.S. Cl. 261—100 5 Claims



1. In a humidifier assembly comprising a humidifier housing having an open bottom, a rear wall opening adapted to be aligned with an opening in ducting containing air to be humidified and a front wall opening over which is mounted an openable door; a water collection pan removably mounted on the housing to close said bottom of said housing, a retaining frame removably mounted in socket means on said pan, said frame being a unitary wire frame forming an open top channel structure, an essentially flat block of substantially uniform thickness synthetic plastic material mounted in said frame and extending from said pan upwardly into said housing adjacent said rear wall opening and extending at least across the area of said opening, said frame having portions engagable with the opposite sides of said pad to support said pad against collapse or distortion, a spray nozzle having a remotely controlled valve mounted on said door and arranged to spray water onto said pad, and means in the wall of said housing for admitting air under pressure into the space between said nozzle and said pad

to pass through said pad and discharge through said rear wall opening of the housing.

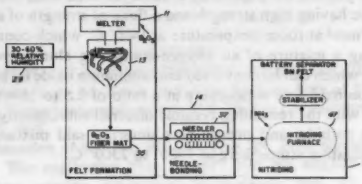
4,354,986
PROCESS FOR MANUFACTURING BORON NITRIDE FIBER MATS USING A NEEDLER

Jacob W. Maczuga, Amherst, N.Y., and Daniel C. Wilhelm, Waltham, Mass., assignors to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 134,904, Mar. 28, 1980, abandoned. This application Jun. 4, 1980, Ser. No. 156,332

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—8 **12 Claims**



1. A process for producing a non-woven, mechanically intertwined boron nitride fiber mat, comprising the steps of:

centrifugally spinning molten boron oxide into strands;

attenuating said strands with a gas stream into fibers;

compacting said fibers into a mat;

passing said mat through a needler to reorient and intertwine the fibers; and

heating said mat in an anhydrous ammonia atmosphere at a sufficient temperature and for a sufficient time to convert boron oxide in the fibers into boron nitride.

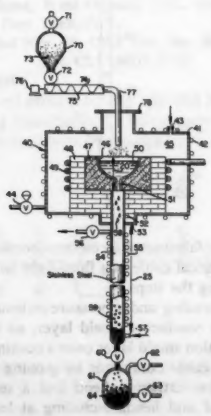
4,354,987
CONSOLIDATION OF HIGH PURITY SILICON POWDER

Sridhar K. Iya, Williamsville, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1981, Ser. No. 249,443

Int. Cl.³ B01J *2/04*

U.S. Cl. 264—13 **6 Claims**



1. Method for obtaining high purity silicon in shotted form by consolidating a powder formed of fine size particles of high purity silicon formed by the pyrolysis of high purity silane, said method comprising:

(i) introducing a flow of powder formed of said particles into a heated zone which is at a temperature sufficient to melt the particles,

(ii) collecting the particles in a crucible which is positioned in the heated zone and which is essentially inert to melted silicon particles so as to establish a pool of molten silicon in said crucible, into which pool additional particles are added and melted,

(iii) providing an aperture in said crucible below the surface of the pool of molten silicon,

(iv) establishing a pressure differential between the upper surface of said pool of molten silicon and said aperture sufficient to cause molten silicon to exit said aperture in a relatively steady jet which breaks up into a train of discrete molten droplets, having a diameter about two times that of said aperture,

(v) causing said discrete molten droplets to pass through a cooling zone containing a cooling gas which is essentially non-reactive with said molten droplets and which is at a temperature sufficient to solidify at least the outer peripheral portion of said droplets to provide silicon in shotted form having a purity essentially the same as that of said powder.

4,354,988
PROCESS FOR MAKING VIDEO DISCS

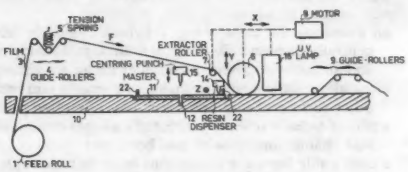
Claude Bricot, and Gerard Robin, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Mar. 4, 1980, Ser. No. 127,116

Claims priority, application France, Mar. 6, 1979, 79 05733

Int. Cl.³ H05B *1/00*; B29D *17/00*

U.S. Cl. 264—22 **10 Claims**



1. A process for making at least a single faced video disc having an engraved zone carrying information in the form of surface micro-reliefs from at least one master utilizing a pressure roller and a flexible film of transparent substrate which comprises:

positioning said film above said master;

depositing a fillet of resin on said at least one master outside said engraved zone and below said film;

advancing said roller in a direction perpendicular to said fillet of resin so as to contact said film with said fillet or resin to drive said fillet of resin in front of said roller and said film and to uniformly spred said fillet of resin between said at least one master and said film so as to form a layer of said resin on said film;

retracting said roller from said engraved zone;

removing said combined film and layer of resin from said at least one master; and

curing said layer of resin so as to form said disc.

4,354,989
EXTRUSION OF INSULATING PLASTIC

Shirley Beach, North Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

Filed Apr. 2, 1981, Ser. No. 250,166

Claims priority, application Canada, Jun. 17, 1980, 354140

Int. Cl.³ B29D *27/00*; B29F *3/10*

U.S. Cl. 264—40.6 **28 Claims**

1. A method of extruding an insulating plastic covering around an advancing core which comprises:

guiding an advancing core through an extrusion die,

forcing a stream of molten insulating material to said die, transversely of said advancing core,

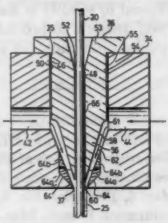
dividing said stream into a pair of streams, flowing in opposite directions, along paths spaced circumferentially from the advancing core,

directing said streams radially inwardly towards each other,

deflecting said radially inwardly directed streams directly along a fixed annular path, to form a tubular stream flowing in the direction of the advancing core and spaced around the advancing core, said tubular stream flowing towards said advancing core and decreasing in cross-section in the direction of flow as it approaches said advancing core,

contacting said advancing core and the flowing tubular stream to form a continuous coating of said molten material on said advancing core, and

cooling said molten material to form a solidified covering of insulating plastic on said core.



14. A die assembly for the extrusion of molten insulating plastic around an advancing core, including:

an extrusion die comprising a cylindrical body having a centrally disposed die bore therethrough defining an inlet and an outlet opposed to said inlet for an advancing core,

circumferential channel means spaced around said bore in an outer surface of said body, for flow of molten plastic,

a pair of radially inwardly directed passages communicating said channel means with said bore, and

a core guide having a continuous bore therethrough for an advancing core, adapted to be removably seated in a fixed position in the die bore,

said core guide including a deflecting surface which defines with said die bore an annular space, said deflecting surface being adapted to deflect molten plastic delivered through said passages along said annular space towards said die bore outlet, said annular space decreasing in cross-section towards said outlet.

4,354,990

PROCESS FOR SINTERING SILICON NITRIDE COMPACTS

Pier C. Martinengo; Angelo Giachello; Giuseppe Tommasini, all of Turin, Italy, and Paul Popper, Newcastle, England, assignors to Fiat Societa per Azioni, Turin, Italy

Continuation of Ser. No. 970,592, Dec. 18, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 180,725

Claims priority, application Italy, Dec. 23, 1977, 69899 A/77; Dec. 23, 1977, 69900 A/77; Dec. 5, 1978, 69777 A/78

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—65 **32 Claims**

1. A process for increasing the density of a reaction bonded silicon nitride article, which comprises the step of sintering the reaction bonded silicon nitride article of a density of at least 2.2 g/cm^3 in an atmosphere consisting essentially of nitrogen at substantially atmospheric pressure at a temperature of 1600° to 2000° C., while the article is embedded in a protective powder comprising silicon nitride, boron nitride, or a mixture of silicon nitride and boron nitride, and one or more sintering additives for silicon nitride, said sintering additives being present in the protective powder in an amount of from 3 to 20% by weight, wherein said sintering additives are selected from the group consisting of MgO, Y_2O_3, Mg_3N_2, CeO_2 and mixtures thereof with Fe.

4,354,991

DENSE SINTERED SILICON CARBIDE CERAMIC

Kelichiro Suzuki; Takuro Ono, and Nobuhiro Shinohara, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,238

Claims priority, application Japan, Jul. 17, 1980, 55-96828; Aug. 29, 1980, 55-118460

Int. Cl.³ C04B *35/56*

U.S. Cl. 264—65 **21 Claims**

1. A process for producing a dense sintered silicon carbide ceramic having high strength and a flexural strength of at least 25 kg/mm^2 at room temperature at 1400° C. which comprises: molding a mixture of an oxygen-containing aluminum compound which can be converted into aluminum oxide by heating in a non-oxidative atmosphere at a ratio of 0.5 to 35 wt.% as Al_2O_3 with the remaining ceramic material substantially being silicon carbide; and pressureless sintering said mixture in a non-oxidative atmosphere at 1900° to 2300° C.

4,354,992

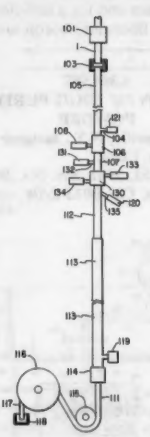
ELECTROCHEMICAL TREE RESISTANT POWER CABLE

George Bahder, Edison, N.J., assignor to Cable Technology Labs., Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 147,212, May 6, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 235,090

Int. Cl.³ B29D *9/04*

U.S. Cl. 264—85 **21 Claims**



1. A method for fabricating an electrochemical tree resistant high voltage electrical cable in a fluid-tight environment, said method comprising the steps of:

successively extruding under pressure an insulation structure comprising a conductor shield layer, an insulation layer and an insulation shield layer over a continuously advancing stranded cable conductor by passing said conductor through a first extrusion head and a second extrusion head, each of said heads including at least one die for extruding one of said layers over said conductor, wherein said heads and said dies apply external pressure inwardly against the layers;

applying internal pressure through said conductor outwardly against the insulation structure;

applying reduced external pressure inwardly against the

insulation structure such that the extruded conductor exiting each of said heads and dies has a diameter greater than the inner diameter of the previous extrusion die, and wherein said external pressure and said reduced external pressure is always higher than said internal pressure;

curing the conductor shield layer, the insulation layer and the insulation shield layer by applying a heated pressurized curing medium to the outer surface of the insulation shield layer, and

gradiently cooling the insulated cable to approximately room temperature with a pressurized cooling fluid while maintaining the internal pressure throughout said curing and cooling steps at a level lower than the external pressure applied during curing and cooling.

4,354,993

METHOD OF MANUFACTURING A MAGNET BODY

Franciscus X. N. M. Kools, and Sytse Strijbos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 609,014, Aug. 29, 1975, abandoned. This application May 27, 1977, Ser. No. 801,029

Claims priority, application Netherlands, Sep. 17, 1974, 7412288

Int. Cl.³ C04B *35/26*

U.S. Cl. 264—86 2 Claims

1. In a method of manufacturing a sintered permanent magnetisable body essentially consisting of a ferrite of formula $MeO.6Fe_2O_3$, wherein Me is at least one of the metals barium, strontium and lead, wherein a suspension of the powdered ferrite in an aqueous liquid is formed, the suspension being compressed while removing the liquid to form a compact product and the compact product thereafter being sintered into a coherent body, the improvement wherein an acid is added to the suspension to dissolve small particles and thereby reduce the time required to compress the suspension into a compact body.

4,354,994

SPINNING PROCESS FOR ANTIMONY OXIDE/HALOGENATED AROMATIC POLYESTER COMPOSITION

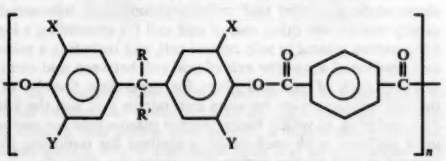
Albert G. Williams, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,203

Int. Cl.³ D01D *1/10*

U.S. Cl. 264—169 9 Claims

1. An improved process for dry spinning into fiber a composition consisting essentially of a halogenated aromatic polyester having recurring units of the structural formula:



wherein X, which may be the same or different, may be chlorine or bromine, Y, which may be the same or different, may be hydrogen, chlorine, or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 10, and an oxide of antimony, said process comprising spinning said composition through a spinneret having one or more holes which have a diameter of from about 60 to about 200 microns.

4,354,995

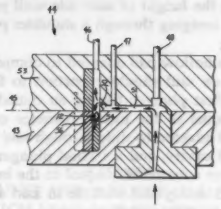
METHOD FOR MAKING A CONNECTOR CONDUCTOR CUTTER

Charles A. Wiechard, Tucker, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,628

Int. Cl.³ B29D *3/00*; B29F *1/00*

U.S. Cl. 264—250 5 Claims



1. A method of making a tool having a cutting blade, said method comprising the steps of:

supporting a blade member, having a cutting edge, in a cavity of a first mold to position the blade member with the cutting edge and adjacent portions of the blade member extending from the cavity and into a recess of the first mold;

injection molding a hardenable polymeric plastic material about portions of the blade member within the cavity and hardening the plastic material to form a polymeric plastic framework having two generally opposed edges with the cutting edge and the adjacent portions of the blade member extending from the framework;

disposing the blade member and the framework in one portion of a cavity of a second mold with the two edges of the framework and the cutting edge of the blade member contacting internal surfaces of the second mold; and

injecting additional hardenable polymeric plastic material into the cavity of the second mold to cause the framework and the cutting edge to be seated in relatively firm engagement with the contacting surfaces of the second mold and to encapsulate the framework with the additional plastic material, and hardening the additional plastic material to form a tool having a cutting blade precisely positioned in a polymeric plastic housing with the cutting edge projecting a predetermined distance from the housing.

4,354,996

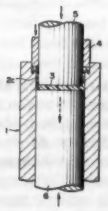
METHOD FOR MAKING A PLASTIC CONTAINER

Seiichi Nishiyama, Kawasaki, and Muneki Yamada, Ebina, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,794

Int. Cl.³ B29C *3/00*

U.S. Cl. 264—322 11 Claims



1. A method for making a molecularly oriented plastic con-

tainer with a flange portion, a side wall portion and a bottom wall portion, a ratio of the height of said side wall portion to the diameter thereof being about 2 to 3, comprising:

a. preparing a blank of molecularly orientable plastic resin;

b. preparing a die having a first cavity, the inside diameter and height of which are not smaller than the inside diameter and thickness of said blank, respectively, and a second cavity having an inside diameter substantially equal to the outside diameter of said side wall portion and a height larger than the height of said side wall portion, said second cavity merging through a shoulder portion with said first cavity;

c. preparing a hollow pad adapted to compress a portion of said blank on said shoulder portion to form said flange portion, a first plunger having an outside diameter substantially equal to the inside diameter of said side wall portion and adapted to slide through said hollow pad into said second cavity, and a second plunger having an outside diameter substantially equal to the inside diameter of said second cavity and slidable in said second cavity in confrontation with said first plunger;

d. placing a portion of said blank, which is to be formed into said flange portion, on said shoulder portion; and

e. maintaining said blank at a molecularly orientable temperature while compressing said blank between said first and second plungers and between said pad and said shoulder portion, said first and second plungers being simultaneously introduced into said second cavity for a distance about 2 to 3 times as large as the inside diameter of said second cavity;

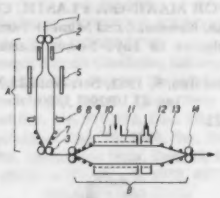
f. so that the thickness of said portion which is to be formed into said flange portion is reduced to the thickness of said flange portion of said plastic container, the thickness of said portion of said blank which has been placed on said second cavity is reduced to the thickness of said bottom wall portion, and said side wall portion is formed with the molecularly oriented resin extruded out of between said first and second plungers, in the gap between said first plunger and said second cavity.

4,354,997

HEAT SHRINKABLE FILM AND PROCESS FOR PREPARING THE SAME

Tomoji Mizutani; Hitoshi Fukushima, and Yoshihiro Sakamoto, all of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,185
Claims priority, application Japan, Aug. 20, 1979, 54/105067
Int. Cl.³ B29D 7/24
U.S. Cl. 264—560 **6 Claims**



1. A process for preparing a heat shrinkable ethylene polymer film which comprises the steps of

(1) introducing a non-stretched tubular film of an ethylene polymer having a density of 0.91 to 0.93 g./cm.³ at 25° C. into a tubular biaxial stretching apparatus, a film obtained by melt-extruding said ethylene polymer and cooling the extrudate to solidify without stretching it showing a tensile strength at 300% elongation of not less than 15 kg./cm.² at a temperature of 15° C. below the melting point of said ethylene polymer,

(2) biaxially stretching said non-stretched tubular film to give a biaxially oriented film by means of an internal gas pressure at a temperature within the orientable temperature range under the following conditions:

(a) the surface temperature of the film at a starting point of expansion being within the range of 15° to 25° C. below the melting point of said polymer,

(b) the film in a stretching zone extending from the starting point to a finishing point of expansion having a temperature gradient such that the surface temperature of the film at a position of ¼ to ¾ the length of the stretching zone from the starting point is maximum, and the difference between the maximum surface temperature and the surface temperature of the film at the starting point being not more than 5° C.,

(c) the temperature drop of the film from the maximum temperature position to the finishing point being within the range of 15° to 20° C., and

(d) the film being cooled while traveling from the finishing point to a distance of 1.0 to 1.5 times the vertical distance of the stretching zone so that the surface temperature of the film drops by 30° to 40° C., and

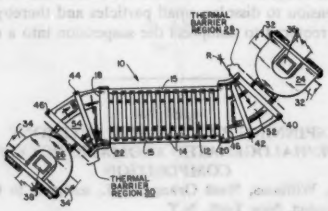
(3) recovering the resulting biaxially oriented film.

4,354,998

METHOD AND APPARATUS FOR REMOVING IONS TRAPPED IN A THERMAL BARRIER REGION IN A TANDEM MIRROR FUSION REACTOR

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 17, 1979, Ser. No. 76,466
Int. Cl.³ G21B 1/00
U.S. Cl. 376—140 **6 Claims**



1. In a tandem mirror fusion reactor having an elongated central cell extending substantially straight longitudinally along an axis and surrounded by magnetic confinement means providing magnetic flux extending in a column axially between the two ends of said cell for confining plasma ions to motion in a column substantially axially of said cell between the ends thereof, and an end plug at each end of said cell providing an electrostatic potential that reflects plasma ions substantially axially toward the other end of said cell for containing a high temperature plasma in said central cell, and including a mirror coil positioned about the axis of said cell between said central cell and each of said end plugs for generation thereby of a thermal barrier region between said mirror coil and the adjacent end plug, in which barrier region plasma ions are trapped upon collision with each other, a method for removing ions trapped in said barrier region comprising the steps of:

(a) applying magnetic field by means of at least one turning coil positioned about the axis of said flux column between each said mirror coil and the respective end plug, with said at least one turning coil being not coaxial with said central cell, to deflect lines of flux passing through said mirror coil to bend the axis of the column of flux in the respective said thermal barrier region in a plane, in which region trapped ions moving substantially axially are thereby caused to drift out of the plasma column perpendicularly to the plane of said bending; and

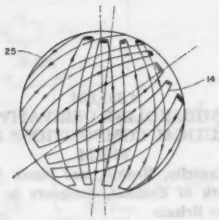
(b) collecting said ions that drift from the plasma column in said thermal barrier region.

4,354,999

PLASMA CONFINEMENT

Robert V. Priest, 337 N. Cassingham Dr., Columbus, Ohio 43209

Continuation of Ser. No. 752,392, Dec. 20, 1976, abandoned.
This application Sep. 24, 1979, Ser. No. 77,996
Int. Cl.[3] G21B *1/00*
U.S. Cl. 376—142 3 Claims



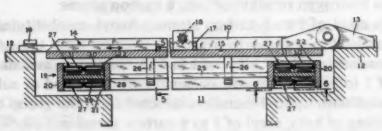
1. An improved plasma confining apparatus of the type having electromagnetic Ioffe bar windings, wherein the improvement comprises a plurality of interconnected Ioffe bar windings each winding being would in a spherical configuration about a plurality of different transverse axes of said spherical configuration, said axes being offset from the center of the spherical configuration, said spherical configuration comprising two adjacent concentric spherical surfaces, each said spherical surface having different finite radii, said Ioffe bar windings lying between said two adjacent concentric spherical surfaces, each said winding being composed of arcuate portions, said Ioffe bar windings forming a closed curve, at least one of said portions extending in said spherical configuration for a distance substantially one half the circumference of said spherical configuration.

4,355,000

LIGHTWEIGHT, REMOVABLE GATE SEAL

Adrian Lumelleau, Bronxville, N.Y., assignor to The Presray Corporation, Pawling, N.Y.

Continuation of Ser. No. 954,978, Oct. 26, 1978, abandoned.
This application May 19, 1980, Ser. No. 151,323
Int. Cl.[3] G21C *13/00*
U.S. Cl. 376—205 11 Claims



1. In a nuclear fuel reactor well or the like including an access passageway provided with an openable gate structure for closing said access passageway, a removable pneumatic action sealing means associated with said gate structure and operable to form a leak-tight seal between the gate structure and reactor well, which comprises

(a) said gate structure being movable between open and closed positions in relation to said access passageway,

(b) a lightweight frame structure independent of the gate structure, removably mounted between said gate structure and said reactor well and defining an elongated support means generally congruent in outline with the outer perimeter of said gate structure when mounted between said gate structure and the access passageway,

(c) inflatable sealing means mounted on said support means and operable to expand between said gate structure when in said closed position and said reactor well to form a leak-tight seal therebetween, and

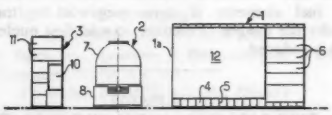
(d) means whereby the frame structure may be lifted and removed from its mounted position between the gate structure and reactor well.

4,355,001

REACTOR UNIT AND A NUCLEAR INSTALLATION WHICH USES SAID REACTOR UNIT

Robert Pierart, Nantes, France, assignor to Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B., Nantes, France

PCT No. PCT/FR79/00095, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00893, PCT Pub. Date May 1, 1980
PCT Filed Oct. 18, 1979, Ser. No. 224,223
Claims priority, application France, Oct. 20, 1978, 78 29963
Int. Cl.[3] G21C *23/00*
U.S. Cl. 376—317 3 Claims



1. A modular stationary nuclear boiler including:

a nuclear reactor;

at least one steam generator connected to said reactor;

a metal casing housing said reactor and said generator;

and auxiliary boiler equipment;

the improvement comprising:

a horizontally movable stand supporting said casing such that said stand and its contents constitutes a horizontally transportable modular reactor unit, and wherein said stand insures the stability of the reactor unit during both operation and transport;

said modular nuclear boiler further including a horizontally transportable metal structure container unit, said metal structure transportable container unit comprising an internal chamber sized to receive said stand installed metal casing bearing said at least one steam generator and said nuclear reactor and to encompass the same, an opening within a side of said metal structure container unit sized to permit passage of said stand bearing said casing therethrough into said internal chamber;

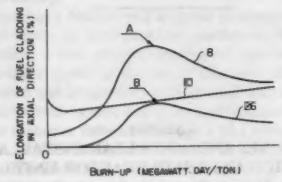
a horizontally transportable closing component sized to said opening for closing off said opening with said metal casing borne by said stand within said internal chamber, and wherein at least part of said auxiliary equipment is integrated into walls of said container unit such that:

the three components formed by the transportable reactor unit casing and stand, said container unit and said closing component may be transported horizontally either together or separately to allow firstly the container unit to be installed, secondly the reactor unit to be inserted therein by horizontal movement through said container unit opening and the opening of the container unit closed off by a further horizontal movement of said closing component.

4,355,002
NUCLEAR FUEL ASSEMBLY

Takanori Hosokawa, Hitachi; Hideo Maki, and Katsutoshi Shinbo, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 626,275, Oct. 28, 1975, abandoned.
This application Oct. 13, 1977, Ser. No. 841,738
Claims priority, application Japan, Oct. 28, 1974, 49-123378
Int. Cl.³ G21C 3/00
U.S. Cl. 376—419 18 Claims

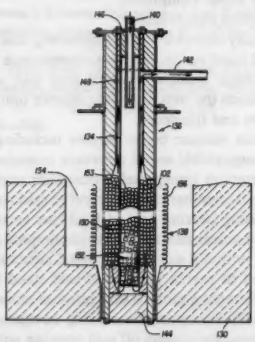


1. In a nuclear fuel assembly including first nuclear fuel elements containing fissionable material and a non-fissionable burnable poison, and second adjacent nuclear fuel elements containing the same fissionable material as contained in said first nuclear fuel elements but being free of said non-fissionable burnable poison, the improvement comprising the enrichment of said fissionable material in said first nuclear fuel elements at zero megawatt.day/ton burn-up being less than the enrichment of said same fissionable material in said second adjacent nuclear fuel elements at zero megawatt.day/ton burn-up, whereby the danger of damage to said first nuclear fuel elements is reduced.

4,355,003
TWO PASS ENDOTHERMIC GENERATOR

Edward W. Grobel, Libertyville, Ill., assignor to General Signal Corporation, New York, N.Y.

Filed Oct. 7, 1980, Ser. No. 194,895
Int. Cl.³ F28D 21/00
U.S. Cl. 422—206 12 Claims



1. An apparatus for carrying out a reaction having an initial exothermic phase and a subsequent endothermic phase, said apparatus comprising:

a first conduit having a top and bottom, an upper recuperator portion, a lower reactor portion, a reaction product outlet means in said recuperator portion;

a second conduit within said first conduit, said second conduit being coaxial with said first conduit and having a diameter less than that of said first conduit by an amount sufficient to create an annular space between said conduits, said second conduit extending from adjacent said top of said first conduit through at least a portion of said lower reactor portion, said second conduit having reaction gas inlet means and means in said reactor portion for communicating the interior of said second conduit with said annular space;

a catalyst bed in at least a portion of said reactor portion; and

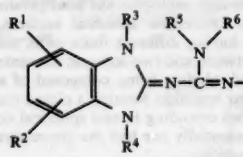
heating means surrounding only the reactor portion of said first conduit.

4,355,004
BENZIMIDAZOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Barrie C. C. Cantello, Redhill, and Susan M. White, Little Bookham, both of England, assignors to Beecham Group Limited, Great Britain

Filed Oct. 23, 1980, Ser. No. 199,733
Claims priority, application United Kingdom, Nov. 10, 1979, 7938997
Int. Cl.³ A61K 31/415; C07D 233/48
U.S. Cl. 422—246 10 Claims

1. A compound selected from the group consisting of a benzimidazoline of formula:



pharmaceutically acceptable acid addition salts thereof and pharmaceutically acceptable quaternary ammonium salts thereof

wherein

R^1 and R^2 are the same or different and each is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or halo;

R^3 and R^4 are the same or different and each is hydrogen or alkyl of 1 to 6 carbon atoms;

R^5 is hydrogen or alkyl of 1 to 6 carbon atoms;

R^6 is alkyl of 1 to 6 carbon atoms, phenyl unsubstituted or substituted with up to 3 groups selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, and alkoxy of 1 to 6 carbon atoms; or benzyl unsubstituted or substituted with up to 3 members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms and alkoxy of 1 to 6 carbon atoms; or

R^5 and R^6 together with the nitrogen atom to which they are attached are pyrrolidino, piperidino, morpholino, thiamorpholino, or piperazino, unsubstituted or substituted with alkyl of 1 to 6 carbon atoms, carboxy or alkoxy-carbonyl of 1 to 6 carbon atoms; and

R^7 is phenyl, unsubstituted or substituted with up to 3 members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, nitro, hydroxy, amino and carboxy.

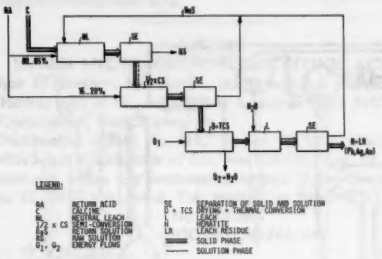
8. A pharmaceutical composition which comprises an antihyperglycemic effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,355,005

PROCESS FOR THE TREATMENT OF A RAW MATERIAL WHICH CONTAINS OXIDE AND FERRITE OF ZINC, COPPER AND CADMIUM

Jussi K. Rastas, Pori; Pekka J. Saikkonen, Espoo, and Risto J. Honkala, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sep. 29, 1981, Ser. No. 306,706
Claims priority, application Finland, Sep. 30, 1980, 803098
Int. Cl.[3] C22B *19/00*; C01G *49/06*
U.S. Cl. 423—41 3 Claims



1. A process for the treatment of a raw material which contains oxides and ferrites of at least one element selected from the group comprising zinc, copper and cadmium, comprising neutral leaching the raw material with a sulfuric-acid-bearing solution in order to leach the oxides without substantially dissolving of the ferrites; a ferrite-bearing residue is separated; mixing a solution of sulfuric acid or ferrisulfate or both with the residue in order to leach the ferrite and to precipitate the iron as jarosite in the presence of alkali ions or ammonium ions under atmospheric conditions at 80°–105° C., the sulfuric acid or ferrisulfate solution being added to the ferrite-bearing residue in such an amount that approximately 50–60% of the ferrite dissolves and its iron precipitates as jarosite; drying the solid phase and heating it to a temperature high enough to convert the zinc of the solid phase to zinc sulfate and its iron to hematite according to the following reaction:

(8) $3ZnFe_2O_{4(s)}+2A[Fe_3(SO_4)_2(OH)_6]_{(s)}\rightarrow 3ZnSO_{4(s)}+A_2SO_{4(s)}+6Fe_2O_{3(s)}+6H_2O_{(g)}$, (A=Na, K)

and finally slurrying the so treated solid phase in water in order to leach the sulfates and separate them from hematite.

4,355,006

PROCESS FOR THE OXIDATIVE DISSOCIATION OF CHROME-CONTAINING ORES

Jakob Rademachers, Krefeld, and Ingo Pflugmacher, Meerbusch, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,551
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935718
Int. Cl.[3] C01G *37/14*
U.S. Cl. 423—61 4 Claims

1. A process for the oxidative dissociation of chrome-containing ores comprising agglomerating a mixture of a chrome-containing ore, an alkaline substance and a moist dissociated leached material containing about 15 to 25% by weight of water from a preceding dissociation operation as a leaning agent, the moist dissociated leached material being added in such a quantity that the agglomerates obtained have a moisture content of between about 5 and 20% by weight, said moisture being obtained solely from the quantity and moisture content of said dissociated leached material, dissociating the agglomerate and then leaching to form a solution of chromate and a solid residue, and separating said solution from said solid residue still wet with said solution.

4,355,007

TWO STAGE CHLORINATION PROCESS FOR ALUMINUM VALUE CONTAINING SOURCE

Wendell E. Dunn, Jr., Star Rte. 68D, Lead, S. Dak. 57754

Filed Apr. 20, 1981, Ser. No. 255,552
Int. Cl.[3] C01G *35/00, 33/08*; C01F *7/56*; C01G *49/10*
U.S. Cl. 423—79 1 Claim

1. A two stage process for chlorinating aluminum value containing materials which also contain iron, titanium and silica comprising the steps of:

(A) dehydrating the material at a temperature of between about 500° and about 1300° K.;

(B) chlorinating the product of step (A) in the presence of chlorine and carbon at a temperature below about 1200° K. and under conditions which provide chlorination of a majority of the iron present in the aluminum value containing material without substantial chlorination of titania values present therein with concommittant formation of an iron chloride cloud above the surface of the chlorination reaction mixture;

(C) introducing oxygen into the iron chloride cloud under conditions to cause oxidation of a majority of the iron chloride contained in the cloud; and

(D) chlorinating the non-gaseous product of step (B) in the presence of chlorine and carbon at a temperature above about 1300° K. but below the fusion temperature of silica containing components and under conditions sufficient to chlorinate substantially all the alumina, titania and silica values contained therein.

4,355,008

CHLORINATION PROCESS

Wendell E. Dunn, Jr., Spearfish, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 20, 1981, Ser. No. 255,553
Int. Cl.[3] C01G *35/00, 33/08*; C01F *7/56*; C01G *49/10*
U.S. Cl. 423—79 2 Claims

1. A method for producing alumina from a material containing alumina, titania, silica and iron values via a chlorination step which process comprises the steps of:

(A) dehydrating the material at a temperature of between about 500° and 1300° K.;

(B) chlorinating the product of step (A) in the presence of chlorine and carbon at a temperature below about 1200° K. and under conditions which provide chlorination of a majority of the iron present in the material without substantial chlorination of titania values present therein with concommittant formation of an iron chloride cloud above the surface of the chlorination reaction mixture;

(C) introducing oxygen into the iron chloride cloud under conditions to cause oxidation of a majority of the iron chloride contained in the cloud;

(D) chlorinating the non-gaseous product of step (B) in the presence of chlorine and carbon at a temperature above about 1300° K. but below the fusion temperature of silica containing components and under conditions sufficient to chlorinate substantially entirely the alumina, titania and silica values contained therein;

(E) reducing and condensing any iron chloride contained with the aluminum chloride in one or more partial iron chloride condensation stages;

(F) absorbing the aluminum chloride under high temperature conditions with an alkali chloride or mixture of alkali chlorides to form an ionic alkali metal aluminum chloride complex;

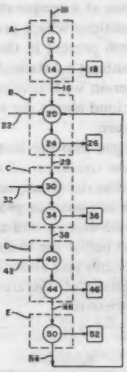
(G) selectively condensing any impurity chlorides contained in the product of step (F) to produce a purified aluminum chloride-alkali chloride complex;

(H) hydrolysing the alkali metal/aluminum chloride complex with steam to produce alumina and hydrochloric acid.

4,355,009
SEPARATIVE TREATMENT OF ZINC-BEARING FLUE DUST

Maxson L. Stewart, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 29, 1980, Ser. No. 154,345
Int. Cl.³ C01G 9/06
U.S. Cl. 423—101 15 Claims



1. A hydrometallurgical process for separative treatment of zinc-bearing metallurgical flue dust, comprising:

(a) providing as a starting material a zinc-bearing flue dust containing significant amounts of lead, chlorine, and iron;

(b) leaching said starting material in sulfuric acid solution of concentration at least about sufficient for substantially complete dissolution of soluble metal oxide constituents; then selectively adjusting the pH of the loaded leach solution to at least a sufficiently acidic condition corresponding to the selected extent of subsequent chloride removal; and separating undissolved residue from the leach solution; then

(c) removing chloride from said leach solution to selected extent corresponding to said selected acidic pH by precipitating cuprous chloride while suppressing formation of cuprous oxide, cuprous ions being provided in at least stoichiometric amount by reduction in deoxidized solution of cupric ions with metallic copper, the ratio of metallic copper to cupric copper being at least about 1; and after sufficient reaction time separating precipitate from the leach solution; then

(d) cementing residual copper from said solution with zinc powder; then

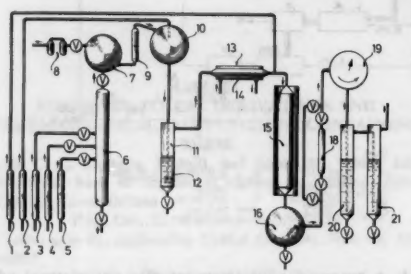
(e) precipitating iron from said solution by the addition of an oxidant and a neutralizer in at least about stoichiometric amounts while maintaining pH of said solution acidic; followed by separating precipitate from said solution; and then

(f) crystallizing zinc sulfate from said solution.

4,355,010
PROCESS FOR REMOVING PHOSPHORUS IN VAPOR FORM AND PHOSPHANES FROM GAS MIXTURES

Klaus Jödden; Friedrich-Wilhelm Dorn, both of Hürth; Gero Heymer, Erftstadt, and Hans-Werner Stephan, Cologne, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,761
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944288
Int. Cl.³ B01D 53/34; C01B 25/12
U.S. Cl. 423—210 4 Claims



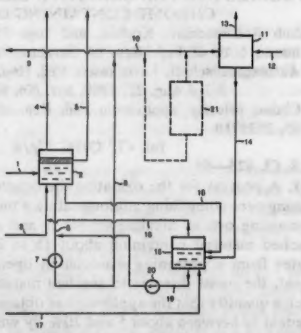
1. In a process for removing phosphorus vapor and one or more phosphines from carbon monoxide-containing off-gas generated in the furnace production of elemental phosphorus by oxidizing, with at least a stoichiometric amount of oxygen or an oxygen-containing gas necessary to achieve conversion of the total phospohorus present to oxidation stage V, for 0.5–20 seconds in a reaction zone heated to 200–700° C, the improvement which comprises:

scrubbing the oxidized off-gas with an aqueous alkaline solution to separate the resulting phosphorus-V compounds from the oxidized off-gas.

4,355,011
SUPPRESSING DECOMPOSITION OF ALKALINE SOLUTIONS OF SALTS OF ANTHRAQUINONEDISULFONIC ACID

Günter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,370
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016240
Int. Cl.³ B01D 53/34
U.S. Cl. 423—224 11 Claims



1. In a process for the suppression of the decomposition of an aqueous alkaline solution of salts of anthraquinonedisulfonic acid, said solution containing alkali sulfates, wherein a main stream of said solution is provided, and a partial stream of the

solution is removed from said main stream and is subjected to combustion taking place under reducing conditions to remove said sulfates, and withdrawing a liquid product from the combustior, the improvement which comprises contacting the liquid product withdrawn from the combustion with an oxygen-containing gas to convert alkali sulfides and/or alkali hydrogen sulfides contained therein to alkali thiosulfate, and admixing a sufficient concentration of the alkali thiosulfate formed with said main stream of aqueous alkaline solution of salts so as to suppress decomposition of said salts of anthraquinonedisulfonic acid.

4,355,012

MIXED ANTHRAQUINONEDISULFONIC ACIDS

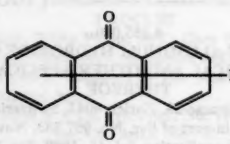
Edgar E. Renfrew, Flemington, and Dominic A. Zanella, Lock Haven, both of Pa., assignors to American Color & Chemical Corporation, Lock Haven, Pa.

Continuation of Ser. No. 919,776, Jun. 28, 1978, abandoned, which is a continuation of Ser. No. 715,636, Aug. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,917, Sep. 12, 1975, abandoned. This application Mar. 14, 1979, Ser. No. 20,326

Int. Cl.³ C07C *143/36, 143/665*

U.S. Cl. 423—226 **6 Claims**

1. A mixture of disulfoanthraquinonecarboxylic acids suitable for use in the Stretford Process and which is the reaction product of the direct sulfonation of an anthraquinone of the formula:



wherein n is an integer of 1–4 and each R is independently selected from alkyl of 1–4 carbon atoms and chloro, at least one R being alkyl, with the proviso that substitution in a single ring is limited to mono-, di- or trisubstitution and substitution in two rings is limited to mono- or di-substitution in each ring.

4,355,013

PROCESS FOR REMOVING SULPHURIC ACID COMPONENTS FROM FLUE GASES

Horst Bechthold, Erftstadt-Friesheim, and Ulrich Mohn, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Buckau R.Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 120,074

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905719; Jul. 14, 1979, 2928526

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **11 Claims**

1. A process for removing sulphuric polluting components from flue gases exhausted from a boiler installation and thereafter being passed through an air preheating means, dust separating means and therefrom through desulfurization means operating with a washing liquid, comprising the steps of branching the exhausted flue gases upstream of the air preheating means into a first branch conducting a main current, and a second branch conducting a smaller current passing the main current through a first dust separating means into washing means operated with an absorption liquid wherein formation of salts by reaction of neutralizing agents with the sulphuric components of the main current takes place and, simultaneously, passing the smaller current in an additional heat separator and then treating the smaller current in a spray drier operating with a washing liquid in which no reaction occurs and thereafter reuniting the treated smaller current with the main current downstream of said air preheating means and upstream of said washing means.

4,355,014

STABLE CALCIUM HYPOCHLORITE COMPOSITION AND METHOD FOR MANUFACTURE THEREOF

Tsugio Murakami; Kazushige Igawa, and Yoichi Hiraga, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed May 23, 1980, Ser. No. 152,720

Claims priority, application Japan, May 29, 1979, 54-65554; Jul. 17, 1979, 54-89777

Int. Cl.³ C01F *11/24;* C01B *11/06;* C09K *3/00*

U.S. Cl. 423—265 **11 Claims**

1. A stable calcium hypochlorite composition having a calcium hypochlorite anhydride and/or a calcium hypochlorite dihydrate as main constituent thereof, said composition comprising at least 60 wt % of calcium hypochlorite, at least 5 wt % of calcium hydroxide, at least 4 wt % of water content and 5 wt % or less than that of calcium chloride.

4,355,015

PROCESS FOR THE PRODUCTION OF FINELY DIVIDED OXIDES OF METALS

Emil Heckel, Essen, Fed. Rep. of Germany; Freddy Seys, Brasschaat; Rene Baeckelmans, Willebroek, both of Belgium, and Wolfgang Heilmann, Bremen, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,242

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923064

Int. Cl.³ C01B *33/18*

U.S. Cl. 423—336 **9 Claims**

1. In a process for the production of a finely divided oxide of a metal or silicon or a mixture of such oxides by the hydrolytic reaction of a volatile chloride of the metal or silicon or a mixture of volatile chlorides of the metal and silicon in a flame wherein said chloride is supplied in admixture with the gases to be burned and air or oxygen to the flame burning out of a burner into a reaction space and brought into reaction with the formation of water and subsequently the aerosol oxide formed together with a residual gas containing chlorine is allowed to pass through a subsequent cooling system and separated off from the residual gas in a separatory apparatus the improvement comprising passing the residual gas containing 300 mg/Nm^3 to 1 g/Nm^3 of chlorine, into an aqueous solution consisting essentially of water and a reducing agent selected from the group consisting of hydrogen peroxide alkali metal hydrogen sulfite, and alkali metal thiosulfate, wherein the chlorine content in the residual gas leaving the solution is reduced to less than 10 mg/Nm^3 and the aqueous solution through which the residual gas has passed contains formed hydrochloric acid.

4,355,016

FEED FORWARD CARBON BLACK REACTOR CONTROL

Galen D. Stacy, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 9, 1980, Ser. No. 195,710

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 **6 Claims**

1. A process to produce carbon black by decomposition of a hydrocarbon feed heated to carbon black formation temperatures by the heat developed by the combustion of a fuel and a free oxygen-containing gas, said process comprising

a. determining the content of water in the free oxygen-containing gas,

b. generating at least two control signals, each representative of one of at least two process parameters that can be manipulated, with the proviso that these control signals are generated so that the respective manipulation of the corresponding process parameter would counteract the

effect any change in said water content would have on a given first carbon black property or first carbon black process property,

c. automatically calculating a value for a further carbon black property or further carbon black process property for each of said at least two process parameters,

d. responsive to the results of the calculation in step c selecting at least one of said at least two control signals for actual control,

e. manipulating the process parameter or parameters responsive to the so selected respective control signal or signals such as to maintain said given first carbon black property or respectively first carbon black process property essentially constant.

4,355,017

ALUMINUM ELECTROLYTIC CELL CATHODE WASTE RECOVERY

Bernard W. Gamson, Potomac, Md., and Howard W. Hayden, Jr., The Dalles, Oreg., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed May 14, 1981, Ser. No. 263,438
Int. Cl.³ C01B 7/19
U.S. Cl. 423—484 **14 Claims**

1. A process for the decomposition of carbon cathode waste material containing cryolite, aluminum fluoride, calcium fluoride, and sodium fluoride which comprises heating the waste material in the presence of water, oxygen, and sulfur dioxide to a temperature at which hydrogen fluoride is generated.

4,355,018

ASSAY FOR VITAMIN B_{12}

Hans J. Hansen, Allendale, N.J., and Gustavo Reynoso, Endwell, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J. and The Ideal Wilson Medical Center, Johnson City, N.Y.

Filed May 21, 1980, Ser. No. 151,796
Int. Cl.³ G01N 33/56
U.S. Cl. 424—1 **8 Claims**

1. In a radioassay for vitamin B_{12} wherein a serum or tissue extract sample is mixed with a known amount of radiolabeled vitamin B_{12} and an intrinsic factor preparation, the intrinsic factor bound radiolabeled vitamin B_{12} is separated from the unbound radiolabeled vitamin B_{12}, the amount of radiolabeled vitamin B_{12} in the bound or unbound form is determined and compared to a standard curve obtained with samples of known, varying amounts of vitamin B_{12} whereby the amount of vitamin B_{12} in the sample can be determined, the improvement comprising using as said intrinsic factor preparation mouse or rat derived intrinsic factor.

4,355,019

HEPATITIS A TESTING AND GROWTH IN TREE SHREW AS ANIMAL MODEL

Peter Lorenz, Frankfurt am Main, and Anita Schwaier, Eschborn, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,490
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935634
Int. Cl.³ A61K 39/29, 47/00; C12Q 1/18, 1/22, 1/70; G01N 33/54
U.S. Cl. 424—9 **16 Claims**

1. Process for the growth and collection of viral hepatitis antigen type A from a tree shrew (*Tupaia belangeri*), which is used as an animal model, comprising:

(a) infecting said tree shrew with viral hepatitis type A;

(b) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew; and

(c) obtaining said viral hepatitis antigen type A from said infected tree shrew.

6. Process for testing the effectiveness of a disinfectant against viral hepatities type A comprising:

(a) admixing a specific quantity of said viral hepatitis type A to form a suspension;

(b) removing said viral hepatitis type A from said suspension;

(c) admixing said viral hepatitis type A from step (b) with a physiological buffer to form a suspension;

(d) vaccinating a tree shrew (*Tupaia belangeri*), which is used as an animal model, with the suspension from step (c); and

(e) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew, whereby said disinfectant is determined to be effective or ineffective against said viral hepatitis type A if said tree shrew, respectively, does not contract viral hepatitis or does contract viral hepatitis.

9. Process for testing the antiviral effectiveness of a chemotherapeutic agent against viral hepatitis type A comprising:

(a) infecting a tree shrew (*Tupaia belangeri*), which is used as an animal model,

(b) administering said chemotherapeutic agent to said infected tree shrew; and

(c) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew,

whereby said chemotherapeutic agent is determined to be ineffective against said viral hepatitis type A if said antibody determination detects HAAg antibody in said tree shrew.

4,355,020

THIXOTROPIC ALUMINUM HYDROXIDE CHLORIDE AND MEDICAL AND OTHER APPLICATIONS THEREOF

Bert Kuy, Holzestrasse 28, Zurich 8042, Switzerland

Continuation-in-part of Ser. No. 957,333, Nov. 3, 1978, abandoned. This application Jul. 15, 1980, Ser. No. 169,479
Claims priority, application United Kingdom, Nov. 12, 1977, 47179/77
Int. Cl.³ A61K 9/70, 33/08, 7/38, 31/79
U.S. Cl. 424—28 **17 Claims**

1. A composition for medical application comprising thixotropic aluminum hydroxide chloride having an aluminum to chlorine ratio in the range of 5:1 to 6:1 which is the chlorination product of pseudoboehmite, and from 1–5 g per 100 g of additional ingredients selected from the group consisting of lanolin, a C_{8-22} fatty acid, a C_{8-20} fatty alcohol, collagen, polyalkylene, disinfectants, fungicides, bacteriostats, bactericides, fungistats, antimycotics, tartaric acid and glycerol.

4,355,021

VIRUCIDAL WIPE AND METHOD

Mearl C. Mahl, Racine; Elliot C. Dick, Madison, and George R. Walter, Jr., Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 29, 1980, Ser. No. 201,960
Int. Cl.³ A61K 9/70; A61F 13/00; A61L 15/03; A61K 33/18
U.S. Cl. 424—28 **13 Claims**

1. In a method for removal of respiratory viral infection-related nasal secretions of the type including the step of wiping nasal surfaces with a dry, flexible, absorbent wipe material, the improvement comprising:

providing such wipe material having substrate means with impregnant therein which in contact with moisture will release iodine on said substrate means in an amount sufficient to provide virucidal activity, said wipe material being substantially free of moisture before use and said impregnant retaining the iodine from escape from said wipe material before use;

contacting said wipe material with nasal surfaces to remove nasal discharge therefrom, thereby moistening said wipe material to release on said wipe material a virucidally sufficient amount of iodine; and

thereby killing with said iodine viruses on the contacted surfaces,
whereby transmission of respiratory viral infection is interrupted without significantly modifying behavioral patterns of infected persons.

4,355,022
METHOD OF DENTAL TREATMENT
Dietmar P. Rabussay, Gaithersburg, Md., assignor to Interon, Inc., Potomac, Md.
Filed Jul. 1, 1981, Ser. No. 279,536
Int. Cl.³ A61K *7/28, 37/48*
U.S. Cl. 424—50 6 Claims

1. The method of dental caries and gum treatment and for removing plaque and calculus comprising applying periodically in situ in the oral cavity on the plaquecalculus substrate or the gums an active material including an enzyme solution containing lysozyme of controlled purity and concentration of the class that materially degrades the peptidoglycan gram (+) cell walls of bacteria forming the substrate, so that bacteria are removed from the site including the step of using a lysozyme concentration in the solution of the order of one tenth milligram per milliliter, and applying the lysozyme in situ in the oral cavity in that concentration on the substrate thereby to remain resident on the substrate for a few minutes.

4,355,023
ANTIBODY FRAGMENT COMPOSITIONS AND PROCESS
Paul H. Ehrlich, White Plains, N.Y.; Gary R. Matsueda, Winchester, Mass.; Michael N. Margolies, and Edgar Haber, both of Weston, Mass., assignors to The Massachusetts General Hospital, Boston, Mass.
Filed Sep. 30, 1980, Ser. No. 192,696
Int. Cl.³ A61K *39/395*
U.S. Cl. 424—85 9 Claims

1. The process for producing an immunogenic fragment of rabbit immunoglobulin G antibody which comprises the following steps A and/or B and C:

A. isolating a composition rich in light variable chain by:
- a. recovering the light chain from a non-immune rabbit immunoglobulin G,
- b. reducing and alkylating said light chain,
- c. acid cleaving said light chain between aspartic acid at position 109 and proline at position 110 of said chain,
- d. purifying said acid cleaved light chain to recover a fraction rich in a fragment comprising positions 110 to 211,
- e. applying said purified fraction to a chromatographic column to effect binding of a subfraction rich in light constant chain of said rabbit immunoglobulin G,
- f. cross-linking a portion of said acid cleaved light chain,
- g. administering said cross-linked light chain into an animal species other than a rabbit,
- h. recovering anti-serum from said animal,
- i. applying said anti-serum to said column containing the light constant chain in order to attach the anti-light constant chain to said column,
- j. eluting said anti-light constant chain from said column,
- k. applying said anti-light constant chain to a second chromatographic column,
- l. acid cleaving and reducing a portion of said light chain,
- m. reacting the product of step l with *p*-chloromercuribenzoate and applying the product of step m to the column of step k and recovering a solution rich in said anti-light variable chain,

B. isolating a composition rich in heavy variable chain by:
- a. isolating the heavy chains of non-immune rabbit immunoglobulin G,
- b. amino ethylating said heavy chain,
- c. reducing said heavy chain either concomitantly with said amino ethylation or subsequent to said amino ethylation,
- d. purifying said amino ethylated and reduced heavy chain,
- e. contacting said reduced amino ethylated heavy chain with activated cathepsin B to cleave the heavy chain at two adjacent cysteine residues at positions 133 and 134 on the peptide chain,
- f. attaching said heavy chain fragment to a chromatographic column,
- g. forming antibody to said heavy chain by injecting an animal species other than a rabbit with said heavy chain and recovering anti-sera from said animal,
- h. passing said anti-sera through said column to attach the anti-heavy constant fragment to said column,
- i. recovering an eluant rich in anti-heavy variable chain fragment;

C. forming an immunoglobulin G fragment having substantial antibody activity by combining (1) said recovered anti-light variable chain with the complementary heavy variable chain of said rabbit immunoglobulin, (2) combining said anti-heavy variable chain fragment to the complementary light chain of said rabbit immunoglobulin G or (3) combining said anti-light variable fragment with said anti-heavy variable fragment.

4. The process of claim 1 comprising steps A, B and C.

7. An immunologically active composition comprising anti-light variable fragment of rabbit immunoglobulin G and anti-heavy variable fragment of immunoglobulin G prepared by the process of claim 4.

4,355,024
METHOD AND FEED FOR STIMULATING THE GROWTH OF ANIMALS
Joseph H. Cort, 300 E. 54 St., New York, N.Y. 10022
Filed Jan. 25, 1979, Ser. No. 6,799
Int. Cl.³ A61K *37/00*
U.S. Cl. 424—177 5 Claims

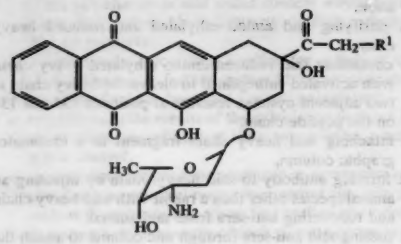
1. A method for stimulating the rate of growth of an animal comprising administering to said animal the methyl ester of aspartyl-phenylalanine in an amount sufficient to stimulate said rate of growth.

4,355,025
BIOLOGICALLY ACTIVE AMIDES
Norman R. Lazarus, Gravesend, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Division of Ser. No. 851,706, Nov. 15, 1977, Pat. No. 4,175,122, which is a continuation-in-part of Ser. No. 676,645, Apr. 14, 1976, abandoned. This application Feb. 6, 1979, Ser. No. 10,081
Claims priority, application United Kingdom, Apr. 15, 1975, 15414/75
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 27 Claims

1. A method of treating a mammal for obesity comprising the parenteral administration to the mammal suffering from obesity of a non-toxic obesity-reducing, treatment effective amount of a polypeptide designated Pancreatic Hormone III or a pharmaceutically acceptable salt or metal complex of said polypeptide.

4,355,026
4-DEMETHOXY,11-DEOXY ANTHRACYCLINE DERIVATIVES
Hamao Umezawa; Tomio Takeuchi; Hiroshi Naganawa, and Kuniaki Tatsuta, all of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Filed Sep. 11, 1981, Ser. No. 300,874
Claims priority, application Japan, Sep. 22, 1980, 55-130645
Int. Cl.³ A61K *31/71*; C07H *15/24*; A61K *31/65*
U.S. Cl. 424—180 21 Claims

1. An anthracycline glycoside of the general formula



I

wherein R^1 represents hydrogen, hydroxyl or (lower)alkanoyloxy, or a nontoxic acid addition salt thereof.

20. A pharmaceutical composition for use in therapeutically treating a mammalian host affected by a microbial infection comprising a therapeutically effective amount of a compound as claimed in claim 1 and a pharmaceutical carrier or diluent.

4,355,027

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING PIRACETAM AND CHOLINE

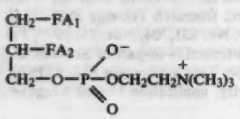
John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 229,704, Jan. 30, 1981, which is a continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 25, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Jul. 20, 1981, Ser. No. 284,768

Int. Cl.³ A61K *31/40, 31/685*

U.S. Cl. 424—199 **10 Claims**

1. The process of reducing or eliminating undesirable effects of piractam administered to a human which side effects result from inadequate release of brain acetylcholine, which comprises administering concomitantly with the piracetam an amount of a compound effective to raise the bloodstream choline level of a patient to between 10 and 15 nanomoles/ml and to release adequate amounts of brain acetylcholine selected from the group consisting of choline, a salt of choline, lysolecithin, an acyglycerophosphocholine, having the formula:



wherein FA_1 and FA_2 can be the same or different and are fatty acid residues having from 6-26 carbon atoms, glycerophosphatidyl choline and mixtures thereof.

4,355,028

COMPOSITION FOR TREATING ACNE VULGARIS

Albert M. Kligman, Philadelphia, Pa.; Walter L. McKenzie, Williamsville, and Peter F. Ciesla, Lancaster, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Continuation of Ser. No. 48,197, Jun. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 893,239, Apr. 4, 1978, Pat. No. 4,318,907. This application Apr. 30, 1981, Ser. No. 259,327

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.³ A61K *31/60, 31/075*

U.S. Cl. 424—230 **16 Claims**

1. A topical, therapeutic composition comprising from about 3% to about 7% salicylic acid and from 3% to about 20% benzoyl peroxide in a pharmaceutically acceptable vehicle comprising an aqueous gel containing an amount sufficient to produce a stable gel of a gelling and thickening agent selected from the group consisting of a mixture of about 1 to about 3% by weight magnesium aluminum silicate with about 1 to about 3% by weight of methyl cellulose, wherein the combined amount of the magnesium aluminum silicate and the methyl cellulose does not exceed about 5% by weight; about 7 to about 9% by weight of magnesium aluminum silicate; about 2 to about 5% by weight methyl cellulose; about 1 to about 3% by weight pectin; about 2 to about 4% by weight xanthan gum; about 4 to about 6% by weight polyethylene oxide having an average molecular weight of about 400,000; about 5 to about 7% by weight polyethylene oxide having an average molecular weight of about 300,000; about 3 to about 5% by weight polyethylene oxide having an average molecular weight of about 600,000; about 1 to about 3% by weight polyacrylamide; and about 2 to about 4% by weight of a 1:1 mixture of hectorite and hydroxyethylcellulose.

4,355,029

COMBINATION THERAPY FOR RHEUMATOID ARTHRITIS

Anthony S. Ridolfo, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 1, 1981, Ser. No. 269,145

Int. Cl.³ A61K *31/625*

U.S. Cl. 424—232 **2 Claims**

1. A treatment method for rheumtoid arthritis which comprises administering to a patient suffering from rheumatoid arthritis a combination of from 200 to 820 mg. of benoxaprofen and 325 to 1170 mg. of aspirin once a day, from 325 to 1170 mg. of aspirin alone three times a day, all dosages to be administered at approximately six hour intervals; and then repeating the above daily dosage schedule on succeeding days.

4,355,030

ANTIVIRAL COMBINATIONS

Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 206,748, Nov. 14, 1980, Pat. No. 4,289,773, which is a division of Ser. No. 95,804, Nov. 19, 1979, Pat. No. 4,271,162, which is a division of Ser. No. 49,671, Jun. 18, 1979, Pat. No. 4,210,647. This application Apr. 17, 1981, Ser. No. 255,073

Int. Cl.³ A61K *31/495, 31/13*

U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises orally administering to a mammal exposed to influenza virus a virus-suppressing amount of a 1:1 (by weight) ratio of ethyl 6,7-bromo-4-dihydro-3-oxoquinoxaline carboxylate and dicyclooctylamine.

4,355,031

2,3-DIHYDRO-3-[4-(SUBSTITUTED)-1-PIPERAZINYL]-1H-ISOINDOL-1-ONES

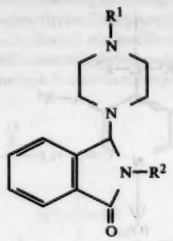
Christopher A. Demerson, and Ivo L. Jirkovsky, both of Montreal, Canada, assignors to American Home Products Corp., New York, N.Y.

Filed May 11, 1981, Ser. No. 262,717

Int. Cl.³ C07D *403/04, 403/14*; A61K *31/41*

U.S. Cl. 424—250 **16 Claims**

1. A compound of formula I



(I)

wherein R^1 is lower alkyl, phenyl, diphenylmethyl, or pyridinyl; and R^2 is hydrogen, lower alkyl or di(lower)alkylamino(-lower) alkyl; or a therapeutically acceptable acid addition salt thereof.

4,355,032

9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)GUANINE AS ANTIVIRAL AGENT

Julien P. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 21, 1981, Ser. No. 267,210
Int. Cl.³ C07D *473/18*; A61K *31/52*
U.S. Cl. 424—253 **5 Claims**

1. The compound 9-(1,3-dihydroxy-2-propoxymethyl)guanine and the pharmaceutically acceptable salts thereof.

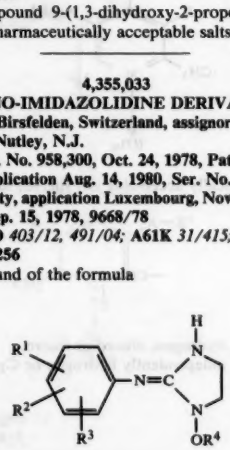
4,355,033

2-IMINO-IMIDAZOLIDINE DERIVATIVES

Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 958,300, Oct. 24, 1978, Pat. No. 4,244,957. This application Aug. 14, 1980, Ser. No. 178,223
Claims priority, application Luxembourg, Nov. 7, 1977, 78467; Switzerland, Sep. 15, 1978, 9668/78
Int. Cl.³ C07D *403/12, 491/04*; A61K *31/415*; C07D *417/12*
U.S. Cl. 424—256 **25 Claims**

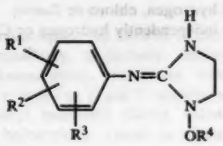
1. A compound of the formula



wherein R^1, R^2 and R^3, independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is hydrogen, alkyl, cycloalkyl, cycloalkenyl, alkenyl, alkynyl, carboxyalkyl, carboxyalkenyl, hydroxyalkyl, cyanoalkyl, phenylalkyl, chlorophenylalkyl, tolylalkyl, alkylthioalkyl, alkoxycarbonylalkyl, alkoxyalkoxyalkyl, aminocarbonylalkyl, monoalkylaminocarbonylalkyl, dialkyl-aminocarbonylalkyl, alkoxycarbonylalkenyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenyl, chlorophenyl, tolyl, (2,2,8-trimethyl-4H-m-dioxino[4,5-c]-pyridin-5-yl)methyl, α-carboxybenzyl, α-alkoxycarbonyl-α-alkylphenyl, or an aromatic heterocyclic residue selected from the group consisting of thienyl, furyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, isoxazolyl and isothiazolyl, which is bonded via a —CH(R^5)— group and is optionally substituted by alkyl or the group —COOR, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1–6 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

25. A method of treating hypertension which comprises administering to a warm-blooded animal requiring such treatment a hypotensively effective amount of a compound of the formula



wherein R^1, R^2 and R^3, independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is hydrogen, alkyl, cycloalkyl, cycloalkenyl, alkenyl, alkynyl, carboxyalkyl, carboxyalkenyl, hydroxyalkyl, cyanoalkyl, phenylalkyl, chlorophenylalkyl, tolyalkyl, alkylthioalkyl, alkoxycarbonylalkyl, alkoxyalkoxyalkyl, aminocarbonylalkyl, monoalkylaminocarbonylalkyl, dialkylaminocarbonylalkyl, alkoxycarbonylalkenyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenyl, chlorophenyl, tolyl, (2,2,8-trimethyl-4H-m-dioxino[4,5-c]-pyridin-5-yl)methyl, α-carboxybenzyl, α-alkoxycarbonyl-α-alkylphenyl, or an aromatic heterocyclic residue selected from the group consisting of thienyl, furyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, isoxazolyl and isothiazolyl, which is bonded via a —CH(R^5)— group and is optionally substituted by alkyl or COOR, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1–6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

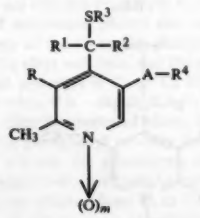
4,355,034

ETHENYL DERIVATIVES OF MERCAPTOALKYLPYRIDINES AS ANTI-INFLAMMATORY AGENTS

Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Conrad P. Dorn, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

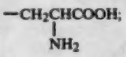
Division of Ser. No. 10,099, Feb. 7, 1979, Pat. No. 4,217,352, which is a division of Ser. No. 842,692, Oct. 17, 1977, Pat. No. 4,144,342, which is a division of Ser. No. 706,033, Jul. 16, 1976, Pat. No. 4,061,759, which is a division of Ser. No. 578,692, May 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 464,011, Apr. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 368,772, Jun. 15, 1973, abandoned. This application Jul. 25, 1980, Ser. No. 172,104
Int. Cl.³ C07D *213/32, 213/34*; A61K *31/44*
U.S. Cl. 424—263 **9 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein
m is 0 or 1;
A is

where R^7 is hydrogen, chloro or fluoro;
R^1 and R^2 are independently hydrogen or C_{1-3}alkyl;
R^3 is
(a) SO_3H;
(b) PO_3H_2;

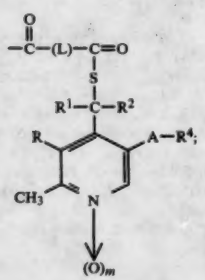


(c)

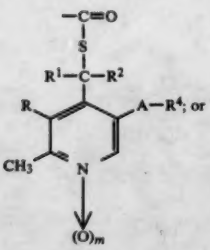
(d) ethoxycarbonylmethyl;

(e)

where E represents
(1) phenyl;
(2) 2-acetoxyphenyl;
(3) 2-hydroxy-4-(2,4-difluorophenyl)phenyl;
(4) 3-chloro-4-allyloxybenzyl;
(5) α-metnyl-4-isobutylbenzyl;
(6) α-methyl-3-phenoxybenzyl;
(7) α-methyl-3-benzoylbenzyl;
(8) 1-(6-methoxynaphth-2-yl)ethyl;
(9) α-methyl-3-fluoro-4-phenylbenzyl;
(10) 2-(3-chloro-4-cyclohexylbenzoyl)ethyl;
(11) 2-(3-trifluoromethylanilino)phenyl;
(12) 2-(2,3-dimethylanilino)phenyl;
(13) 2-(2,6-dichloro-3-methylanilino)phenyl;
(14) 2-(3-trifluoromethylanilino-3-pyridyl; or
(15) 2-(2-methyl-3-chloroanilino)-3-pyridyl;



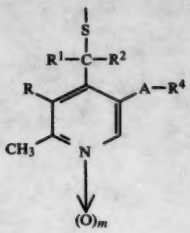
(f)



(g)

-continued

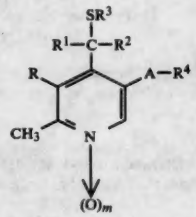
(h)



(c)

R^4 is
(a) hydrogen; or
(b) C_{1-3}alkyl;
R is
(a) hydroxy; or
(b) hydroxy-C_{1-3}alkyl.

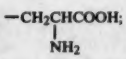
7. A method of treating inflammation which comprises the administration to a warm-blooded animal or human in need of such treatment an effective amount of a compound having the structural formula



or a pharmaceutically acceptable salt thereof wherein
m is 0 or 1;
A is

(f)

where R^7 is hydrogen, chloro or fluoro;
R^1 and R^2 are independently hydrogen or C_{1-3}alkyl;
R^3 is
(a) SO_3H;
(b) PO_3H_2;



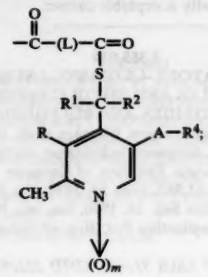
(c)

(d) ethoxycarbonylmethyl;

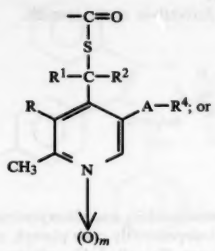
(e)

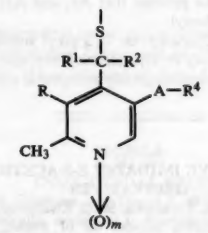
where E represents
(1) phenyl;
(2) 2-acetoxyphenyl;
(3) 2-hydroxy-4-(2,4-difluorophenyl)phenyl;
(4) 3-chloro-4-allyloxybenzyl;
(5) α-methyl-4-isobutylbenzyl;
(6) α-methyl-3-phenoxybenzyl;
(7) α-methyl-3-benzoylbenzyl;
(8) 1-(6-methoxynaphth-2-yl)ethyl;
(9) α-methyl-3-fluoro-4-phenylbenzyl;

(10) 2-(3-chloro-4-cyclohexylbenzoyl)ethyl;
(11) 2-(3-trifluoromethylanilino)phenyl;
(12) 2-(2,3-dimethylanilino)phenyl;
(13) 2-(2,6-dichloro-3-methanilino)phenyl;
(14) 2-(3-trifluoromethylanilino-3-pyridyl; or
(15) 2-(2-methyl-3-chloroanilino)-3-pyridyl;



(f)





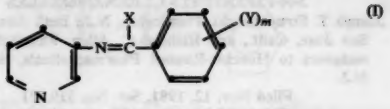
R^4 is
(a) hydrogen; or
(b) C_{1-3}alkyl;
R is
(a) hydroxy;
(b) hydroxy-C_{1-3}alkyl.

4,355,035
DERIVATIVES OF CERTAIN PYRIDYLIMINOMETHYLBENZENES

Pieter Ten Haken, Eastling, Nr. Faversham, and Shirley B. Webb, Sheldwich Nr. Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 130,681, Mar. 17, 1980, abandoned. This application Jan. 26, 1981, Ser. No. 228,427
Int. Cl.³ A01N *43/40*; C07D *213/74*
U.S. Cl. 424—263 **3 Claims**

1. A compound of the formula



(I)

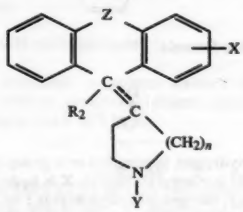
wherein X contains up to ten carbon atoms, and is alkoxy, haloalkoxy, cycloalkoxy, alkenyloxy, alkynyloxy, aryloxy, haloaryloxy, alkoxyaryloxy, aralkyloxy, haloaralkyloxy, or alkoxyaralkyloxy; m is 1 or 2; and Y contains up to ten carbon atoms, and is alkyl, haloalkyl, alkoxy, haloalkoxy, halogen, nitro, aryloxy, haloaryloxy, cyano or alkoxycarbonyl, and acid-addition salts thereof.

4,355,036
TRICYCLIC-SUBSTITUTED PIPERIDINE ANTIHISTAMINES

Frank J. Villani, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 160,795, Jun. 19, 1980, Pat. No. 4,282,233. This application Mar. 16, 1981, Ser. No. 243,681
Int. Cl.³ A61K *31/445*; C07D *211/14*
U.S. Cl. 424—267 **3 Claims**

1. A compound represented by the formula



(i)

wherein
n is 1 or 2;
R_2 is hydrogen or C_1 to C_3 alkyl;
X is hydrogen or halogen;
Z is an alklyene chain having 0 to 2 carbon atoms in the chain, said 2 carbon chain optionally having one double bond, said chain optionally having either a carbonyl oxygen or a hydroxy group as a substituent; and
Y is —COOR or $—SO_2R$, with the proviso that when Y is —COOR, R is C_1 to C_{12} alkyl, substituted C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, substituted C_2 to C_{12} alkenyl, phenyl, substituted phenyl, C_7 to C_{10} phenylalkyl or C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, or R is -2, -3, or -4 piperidyl or N-substituted piperidyl, wherein the substituents on said substituted C_1 to C_{12} alkyl and on said substituted C_2 to C_{12} alkenyl are selected from amino or substituted amino and the substituents on said substituted amino are selected from C_1 to C_6 alkyl, the substituents on said substituted phenyl and on said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo, and the substituent on said N-substituted piperidyl is C_1 to C_4 alkyl, and with the proviso that when Y is $—SO_2R$, R is C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, phenyl, substituted pheny, C_7 to C_{10} phenylalkyl, C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, wherein the substituents on said substituted phenyl and said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo.

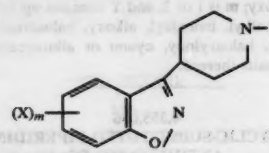
3. A method of effecting an anti-allergic response in an animal in need of such treatment comprising administering to the animal an effective amount of a compound as claimed in claim 1.

4,355,037
3-(4-PIPERIDYL)-1,2-BENZISOXALES

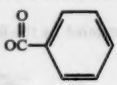
Joseph T. Strupczewski, Flemington, N.J.; Beth Ann Gardner, San Jose, Calif., and Richard C. Allen, Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Somerville, N.J.

Filed Nov. 12, 1981, Ser. No. 319,871
Int. Cl.³ A61K *31/445;* C07D *413/04, 413/14*
U.S. Cl. 424—267 43 Claims

1. A compound of the formula



wherein R is hydrogen, loweralkyl, loweralkenyl, cycloalkyl-loweralkyl, phenyloweralkyl, hydroxy, diloweralkylamino-loweralkyl, cyano, cyanomethyl,



or a group of the formula

wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is phenyl or benzyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or hydroxy; m is 1 or 2; the geometrical isomers and optical antipodes thereof; or the pharmaceutically acceptable acid addition thereof.

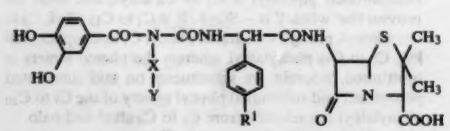
42. A method of alleviating pain comprising administering to a mammal in need of pain alleviation a pain-alleviating, effective amount of a compound as defined in claim 1 or 2.

4,355,038
α-SUBSTITUTED UREIDO-BENZYLPENICILLANIC ACIDS

Nobuhiro Oi, Houya; Bunya Aoki, Tanashi; Teizo Shinozaki, Hasuda; Kanji Moro, Kuki; Toshio Kuroki; Isao Matsunaga, both of Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada; Hisao Endo, both of Tokyo; Takao Kimura, Chiba; Kana Kojima, Mitaka; Masahiko Matsumoto, Kawasaki; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,402
Claims priority, application Japan, Aug. 5, 1980, 55-106775
Int. Cl.³ A61K *31/43;* C07D *499/68*
U.S. Cl. 424—271 4 Claims

1. A compound of the formula



wherein R^1 is a hydrogen atom or hydroxyl group; X is a lower alkyl group of C_{2-3}; and Y is bonded to a terminal carbon atom of the substituent of X and means the group —OR^2 wherein R^2 is a hydrogen atom, a lower alkyl group of C_{1-2}, a lower alkanoyl group of C_{2-3} or a lower alkyl group of C_{2-3} substituted with a hydroxyl group; or a pharmaceutically acceptable salt thereof.

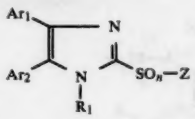
4. A bactericidal composition comprising a pharmaceutically effective amount of a compound according to any one of claims 1,2 or 3, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier.

4,355,039
ANTIINFLAMMATORY-4,5-DIARYL-2-SUBSTITUTED-THIO-IMIDAZOLES AND THEIR CORRESPONDING SULFOXIDES AND SULFONES

Ulrich Niedballa, and Irmgard Böttcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 41,367, May 22, 1979, Pat. No. 4,269,847.
This application Sep. 24, 1980, Ser. No. 190,309
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2823197
Int. Cl.³ A61K *31/415;* C07D *233/84*
U.S. Cl. 424—273 R 33 Claims

1. An imidazole derivatives of the formula



wherein

Z is C_{1-6}-alkyl substituted by one alkoxycarbonyl group;

Ar_1 and Ar_2 are independently each phenyl; or phenyl substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or C_{2-6}-dialkylamino with the proviso that Ar_1 and Ar_2 are not both unsubstituted phenyl;

R_1 is hydrogen, C_{1-4} alkyl or C_{1-4} alkyl substituted by hydroxy, C_{1-4} alkoxy or C_{1-6} alkanoyloxy; and

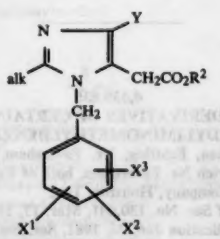
n is 0, 1 or 2; or a physiologically acceptable salt thereof with an acid.

4,355,040
HYPOTENSIVE IMIDAZOLE-5-ACETIC ACID DERIVATIVES

Yoshiyasu Furukawa, Toyonaka; Shoji Kishimoto, Takarazuka, and Kohei Nishikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 5, 1980, Ser. No. 204,357
Claims priority, application Japan, Nov. 12, 1979, 54-146728
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.³ A61K *31/415;* C07D *233/68*
U.S. Cl. 424—273 R 17 Claims

1. A compound of the formula:



wherein alk is lower alkyl or lower cycloalkyl; each of X^1, X^2 and X^3 is independently hydrogen, halogen, nitro, amino,

lower alkyl, lower alkoxyl, benzyloxyl or hydroxyl; Y is halogen and R^2 is hydrogen or lower alkyl, or a pharmaceutically acceptable salt thereof.

4,355,041

4,5-BIS-(4-FLUOROPHENYL)-1-(4-NITROBENZYL)-2-[((1,1,2,2-TETRAFLUOROETHYL)SULFONYL]-1H-IMIDAZOLE, COMPOSITION AND USE

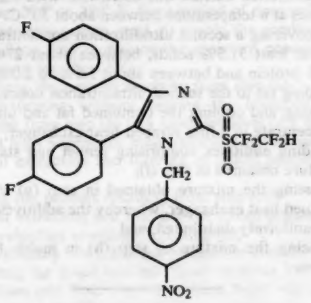
Melvyn J. Myers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 4, 1982, Ser. No. 336,764

Int. Cl.³ A61K *31/415;* **C07D** *233/84*

U.S. Cl. 424—273 R **3 Claims**

1. A compound of the formula:



2. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective antiinflammatory amount of the compound of claim 1.

4,355,042

INSECTICIDAL ESTERS

George Holan, Brighton, and David F. O'Keefe, Mt. Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

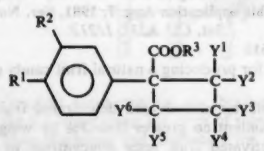
Division of Ser. No. 50,209, Jun. 20, 1979, which is a continuation-in-part of Ser. No. 969,862, Dec. 15, 1978, Pat. No. 4,235,926. This application Oct. 9, 1980, Ser. No. 195,600

Claims priority, application Australia, Dec. 19, 1977, PD2818/77

Int. Cl.³ A01N *43/08;* **C07D** *307/40*

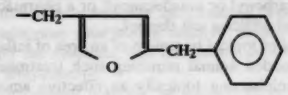
U.S. Cl. 424—285 **13 Claims**

1. The (+), (−) and (±) forms of the compounds of the general formula I



I

wherein R^1 is hydrogen or a methoxy, ethoxy, propoxy, butoxy, tetrafluoroethoxy, methylthio, ethylthio, propylthio, fluoro, chloro, bromo, methyl, ethyl, or nitro group, and R^2 is hydrogen or a methyl group; R^3 is the following group (b):



(b)

and Y^1, Y^2, Y^3, Y^4, Y^5, and Y^6 are the same or different groups and each is hydrogen or a fluoro, bromo or chloro group, with the proviso that one of Y^1 to Y^6 is other than hydrogen.

7. Insecticidal compositions comprising an insecticidally effective amount of one or more of the compounds of formula I as stated in claim 1, incorporated in a suitable inert liquid or solid carrier.

13. The use as insecticides of an insecticidally effective amount of any of the compounds claimed in claim 1.

4,355,043

NOVEL DERIVATIVES OF 3-AMINOPROPANESULFONIC ACID HAVING A REINFORCED ACTIVITY ON MEMBRANE

Jean P. Durlach, Paris, France, assignor to Les Laboratoires Meram, France

Filed May 19, 1980, Ser. No. 150,946

Claims priority, application France, May 23, 1979, 79 13207

Int. Cl.³ A61K *31/315;* **C07F** *3/06*

U.S. Cl. 424—289 **8 Claims**

1. Derivatives of 3-aminopropanesulfonic acid, represented by the formula

$$[CH_3CONH—(CH_2)_3SO_3]_nM$$

in which M represents a member selected from the group consisting of sodium, potassium, lithium, calcium, magnesium and zinc, n being equal to 1 or 2.

4,355,044

D-PHENYLALANINE TREATMENT

Bernardo Heller, 921 N. 35th St., Hollywood, Fla. 33021

Filed Dec. 19, 1980, Ser. No. 218,285

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **1 Claim**

1. A treatment for endogenous depression in human beings comprising the method of administering to said human beings daily oral dosages of D-phenylalanine in dosage amounts of between 50 mgs to 1000 mgs for the treatment of depression.

4,355,045

ANTI-INFLAMMATORY 1-PHENYLETHANOLAMINE DERIVATIVES PHARMACEUTICAL COMPOSITIONS THEREOF AND PROCESSES FOR THEIR MANUFACTURE

John Preston, and Austin J. Reeve, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

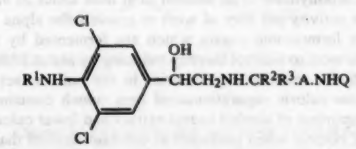
Filed Aug. 3, 1978, Ser. No. 930,859

Claims priority, application United Kingdom, Aug. 16, 1977, 34346/77

Int. Cl.³ A01N *47/28, 37/18*

U.S. Cl. 424—322 **7 Claims**

1. A 1-phenylethanolamine derivative of the formula:



I

wherein R^1 is hydrogen; R^2 and R^3 are both hydrogen or

methyl; A is methylene; and Q is phenylacetyl, phenoxyacetyl, phenylaminocarbonyl or octadecanoyl; or a pharmaceutically acceptable acid-addition salt thereof.

6. A method of topical treatment of an area of inflammation in a warm-blooded animal requiring such treatment, which comprises administering topically an effective amount of a 1-phenylethanolamine derivative of formula I, or of a pharmaceutically acceptable acid-addition salt thereof, as defined in claim 1, to said area of inflammation affecting said animal.

4,355,046

DERMATOLOGIC AND COSMETIC OINTMENT BASE

Hans R. Süess, Engelbergstrasse 281, 4656 Starrkirch, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,512

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010572

Int. Cl.³ A61K *31/01*

U.S. Cl. 424—355 11 Claims

1. Ointment base for use on the skin, in which at least 80 percent by weight thereof is composed of a mixture consisting of 10 to 90 percent by weight of petrolatum fractions in which the ratio by weight of solid constituents to constituents that are liquid at 20 to 50 C is greater than 3:1 and 90 to 10 percent by weight of a material serving as a solvent for said petrolatum fractions and selected from the group which consists of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, hexamethyldisiloxane and mixtures of said siloxanes.

4,355,047

METHOD OF PREPARING A LOW CALORIE BEER

William F. Line, Greenfield, Wis.; Vinod K. Chaudhary, Manhattan, Kans.; Etzer Chicoye, Milwaukee, and Robert J. Mizerak, Waukesha, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 141,536, Apr. 18, 1980, abandoned, and Ser. No. 58,823, Jul. 19, 1979, abandoned. This application May 13, 1981, Ser. No. 263,156

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.³ C12C *9/00, 11/04;* C12N *9/44*

U.S. Cl. 426—13 11 Claims

1. In a method of producing a superattenuated beer by fermenting brewers malt wort with yeast, the improvement which comprises adding to the wort a rice pullulanase in an amount of at least about 2 units of pullulanase activity per liter of wort which is effective in hydrolyzing the alpha 1,6 linkages of wort limit dextrins to form alpha 1,4 dextrins, and adding an alpha 1,4 carbohydrase in an amount of at least about 20 units of amylase activity per liter of wort to convert the alpha 1,4 dextrins to fermentable sugars which are fermented by the yeast in the wort to alcohol thereby reducing by about 30% to about 80% the residual limit dextrins in the real extract to obtain a low calorie superattenuated beer which contains a greater proportion of alcohol to real extract and fewer calories per unit of volume when packaged at constant alcohol than a control beer prepared by the same process without the added pullulanase.

4,355,048

MANUFACTURE OF SEMI-HARD CHEESE BY ULTRAFILTRATION

Johannes E. Schaap, Lunteren; Paulus F. C. Nooy, Bennekom, and Rudolf De Boer, Wageningen, all of Netherlands, assignors to Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek, Ede, Netherlands

Continuation of Ser. No. 65,847, Aug. 13, 1978, abandoned. This application May 11, 1981, Ser. No. 262,637

Claims priority, application Netherlands, Aug. 14, 1978, 7808432

Int. Cl.³ A23C *19/028, 19/05*

U.S. Cl. 426—40 4 Claims

1. A method of manufacturing semi-hard cheese from skimmilk comprising:

(a) continuously feeding skimmilk to a first stage ultrafiltration whereby a first ultrafiltration concentrate is obtained;

(b) subjecting the first ultrafiltration concentrate to a second stage diafiltration until a diafiltration concentrate is obtained having a lactose content between 1.8% and 2.0%;

(c) subjecting the diafiltration concentrate to a third stage ultrafiltration carried out batchwise with tubular membranes at a temperature between about 50° C. and 55° C.;

(d) recovering a second ultrafiltration concentrate containing at least 31.5% solids, between about 27% to about 28% protein and between about 1.8% to 2.0% lactose;

(e) adding fat to the second ultrafiltration concentrate;

(f) mixing and cooling the combined fat and ultrafiltration concentrate in a first scraped heat exchanger;

(g) adding additives comprising rennet and starter to the mixture obtained in step (f);

(h) passing the mixture obtained in step (g) to a second scraped heat exchanger, whereby the additives for cheese are uniformly distributed; and

(i) placing the mixture of step (h) in molds for making cheese.

4,355,049

FLAVORING WITH 2-(α-MERCAPTOALKYL)-3-THIAZOLINE

Marcia D. Spencer, Valley Cottage; Thomas H. Parliment, New City, both of N.Y., and Denise A. Giordano, Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,624

Int. Cl.³ A23L *1/231*

U.S. Cl. 426—535 8 Claims

1. A process for imparting or enhancing a flavor in a foodstuff comprising adding an amount of a flavoring composition chosen from the group consisting of 2,4-dimethyl-2-(mercaptomethyl)-3-thiazoline and 2,4,5-trimethyl-2-(α-mercaptoethyl)-3-thiazoline, to the foodstuff effective to augment or impart a meaty, sauteed onion flavor.

4,355,050

PROCESS FOR PRODUCING A NATURAL FRUIT CANDY

Peter Butland, R.R. #1, Inglewood, Ontario, Canada (L0N 1K0)

Continuation of Ser. No. 134,909, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,761, Apr. 2, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 290,871

Int. Cl.³ A23L *1/212*

U.S. Cl. 426—615 16 Claims

1. A process for producing a natural fruit candy comprising the steps of:

(a) mixing enzyme deactivated dehydrated fruit having a moisture content no greater than 3% by weight and enzyme deactivated fruit juice concentrate to provide a mixture in the form of a plastic mass, the relative proportions of dehydrated fruit to fruit juice concentrate being such that said plastic mass has a moisture content in the range of 8 to 50% by weight,

(b) holding the plastic mass for at least four hours to permit

equalization of the moisture content throughout the mass by reason of natural osmosis and

(c) forming individual candies from the plastic mass.

4,355,051

DIRECT EXTRACTION PROCESS FOR THE PRODUCTION OF A WHITE DEFATTED FOOD-GRADE PEANUT FLOUR

Joseph Pominski, Metairie; James J. Spadaro, New Orleans, and Henry M. Pearce, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 99,812, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 909,160, May 24, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,382

Int. Cl.³ A23L *1/36*

U.S. Cl. 426—632 **4 Claims**

1. A process for preparing a defatted peanut flour consisting essentially of the following steps:

a. heating shelled, raw, unblanched peanuts at a temperature of about 220° to 250° F. for a period of time sufficient to eliminate raw peanut taste, to enable the production of a white flour, and to reduce the moisture content of said peanuts to less than 5%;

b. blanching the peanuts resulting from step (a);

c. remoisturizing without heating the blanched peanuts resulting from step (b) to a moisture level of 8 to 10% to permit high acceptable mass velocities during subsequent solvent extraction and filtering of flaked peanuts in step (e);

d. flaking the peanuts resulting from step (c);

e. solvent extracting and filtering the flaked peanuts at high mass-velocities resulting from step (d);

f. desolventizing the extracted product of step (e); and

g. grinding the desolventized flakes resulting from step (f) into flour, said flour characterized as being white, having no raw peanut taste, and as having a nitrogen solubility of from about 88 to 90% at a pH of 7.5.

4,355,052

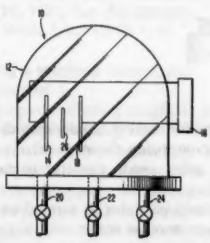
METHOD OF PREPARING AN ABRASIVE COATED SUBSTRATE

Grzegorz Kaganowicz, Princeton, N.J., and John W. Robinson, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,503

Int. Cl.³ B05D *5/02*; E05D *15/10*

U.S. Cl. 427—39 **14 Claims**



1. In a method for preparing an abrasive SiO_x coating, wherein $1 \leqq x \leqq 2$, comprising the steps of submitting SiH_4 and N_2O to a glow discharge and depositing the SiO_x product of the glow discharge onto a substrate;

the improvement comprising the additional step of adjusting the refractive index and thickness of the SiO_x coating by means of the glow discharge deposition process parameters so as to maximize the abrasiveness of the SiO_x coating.

8. In a method for lapping an article comprising the steps of submitting SiH_4 and N_2O to a glow discharge; depositing the product to obtain an abrasive SiO_x coating, wherein $1 \leqq x \leqq 2$, onto a substrate; establishing relative motion between the article and the substrate; and contacting the article with the abrasive SiO_x coating;

the improvement wherein the method comprises the additional step of adjusting the refractive index and thickness of the SiO_x coating by means of the glow discharge deposition parameters so as to maximize the abrasiveness of the SiO_x coating.

4,355,053

METHOD FOR IMPROVING THE ADHESIVENESS OF THE SURFACE OF A SYNTHETIC POLYMERIC SUBSTRATE TO COATINGS

Tuguo Nezu; Masuo Tsuchiya; Masahiro Sakamoto; Hiroyuki Nakayama, all of Hiratsuka, and Shigeo Tazuke, Yokohama, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Mar. 4, 1981, Ser. No. 240,365

Claims priority, application Japan, Mar. 10, 1980, 55-29231

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **5 Claims**

1. A method of forming an adhesive layer on the surface of a synthetic polymeric substrate, which comprises:

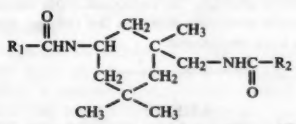
coating the surface of the synthetic polymeric substrate with a photopolymerizable composition comprising:

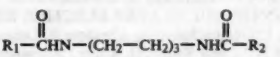
(A) a hydrophilic resin obtained by polymerization of a polymerizable unsaturated monomer composition containing at least 10% by weight of a hydrophilic unsaturated monomer,

(B) a radical-polymerizable mono-unsaturated monomer,

(C) a triplet state sensitizer having a triplet state energy of at least 50 Kcal/mole, and

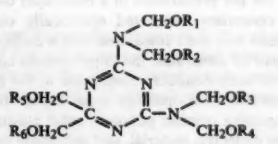
(D) a radical-polymerizable poly-unsaturated compound selected from the group consisting of compounds of the formulae I, II and III:


(I)


(II)

wherein, in formulae I and II, each of R_1 and R_2 represents

$CH_2{=}CHCOOCH_2CH_2O-$ or $CH_2{=}\underset{\displaystyle CH_3}{\overset{|}{C}}COOCH_2CH_2O-$,


(III)

wherein, in formula III, each of R_1 to R_6 represents H, $-CH_3$,

$CH_2{=}CHCOOCH_2CH_2O-$ or $CH_2{=}\underset{\displaystyle CH_3}{\overset{|}{C}}COOCH_2CH_2O-$,

and at least two of R_1 to R_6 represent the acrylic acid ester residue and/or the methacrylic acid ester residue, and

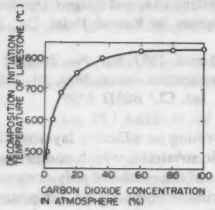
irradiating actinic rays to the coated surface of the polymeric substrate.

4,355,054

PROCESS FOR PRODUCTION OF A LOW HYDROGEN TYPE COVERED ARC-ELECTRODE

Kyoichi Nagano, Kamakura; Toshihiko Takami, Ebina, and Kunio Koyama, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,795
Claims priority, application Japan, Feb. 2, 1980, 55/11738
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—61 5 Claims



1. A process for the production of a low hydrogen type covered arc-electrode, which comprises coating on a core wire a covering which contains Na_2O and K_2O, at an Na_2O/K_2O weight ratio of at least 1, together with a carbonate and baking the thus applied covering at a temperature of from 500° to 800° C. in an atmosphere containing at least 2% of carbon dioxide gas and having a dew point not more than 5° C., said carbon dioxide gas being derived from a source other than the decomposition of said carbonate, wherein said carbon dioxide-containing atmosphere protects the carbonate from decomposition, the carbonate remaining intact in the coating after said baking step has been terminated.

4,355,055

USE OF PROLONGED TACK TONERS FOR THE PREPARATION OF MULTILAYER ELECTRIC CIRCUITS

Grant A. Beske, Princeton Junction; Abraham B. Cohen, Springfield, both of N.J., and Roger O. Uhler, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 124,607, Feb. 25, 1980, Pat. No. 4,303,698.
This application Jul. 30, 1981, Ser. No. 288,401
Int. Cl.³ H05K *3/46*
U.S. Cl. 427—96 6 Claims

1. A process for the preparation of a multilayer conductive circuit which comprises connected electrically conductive patterns on at least two inert substrates with a dielectric layer between each pair of substrates, the improvement comprising (a) applying over each conductive substrate in the form of a layer with connector hole openings a particulate prolonged tack toner comprising organic polymer, solid plasticizer and particles of glass dielectric material, and optionally containing inorganic particles, (b) heating the layer containing prolonged tack toner to a temperature sufficient to activate the toner by rendering the toner tacky, (c) reducing the temperature of the layer below the activating temperature of the prolonged tack toner wherein the activated prolonged tack toner remains tacky, (d) repeating steps (a) to (c) at least one time, and (e) firing the dielectric layer to a temperature sufficient to form a smooth layer.

4,355,056

METHOD OF MANUFACTURING A COMBUSTIBLES SENSOR

Ralph A. Dalla Betta, Mountain View, Calif., and Sharon L. Zimmerlin, Chagrin Falls, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 31, 1981, Ser. No. 249,308
Int. Cl.³ G01N *31/12*; B05D *5/12*; H01L *7/00*
U.S. Cl. 427—126.4 10 Claims

1. A method of manufacturing a combustibles sensor which is relatively insensitive to sulfur poisoning comprising the steps of:

providing a first temperature measurement device which has a temperature varying electrical property;

coating said temperature measurement device with a gel to form a high surface area substrate with increased surface area over said temperature measurement device;

coating said gel high surface area substrate with a catalytic material; and

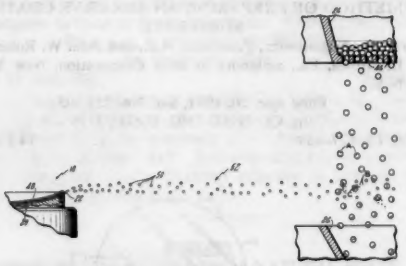
treating said catalytic material coating with H_2S to achieve a high surface area of the catalytic material.

4,355,057

FORMATION OF ALLOY POWDERS THROUGH SOLID PARTICLE QUENCHING

Edward R. Slaughter, Palm Beach Shores, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,231
Int. Cl.³ B05D *7/00*
U.S. Cl. 427—216 4 Claims



1. A method for making rapidly quenched particles of metallic material, comprising the steps of:

providing solid, small diameter particles of said metallic material;

dispersing said particles in a ramdom array, falling freely through an annular space;

atomizing within said annular space a melt of metallic material and directing said material into an essentially planar stream of tiny droplets having a size significantly smaller than said particle;

traversing said tiny droplets in molten form radially across said annular space causing random collision of the droplets and the particles whereby each droplet in collision with one or more of said particles becomes solidified at least in part thereon to form coated solid particles of increased size.

4,355,058

POWDERY COATING MEDIA AND THEIR USE

Rainer Gras, Herne; Johann Obendorf, Dorsten, and Elmar Wolf, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

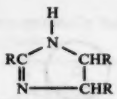
Filed Aug. 14, 1978, Ser. No. 933,583

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738270

Int. Cl.³ C08G *59/40, 59/56, 18/58*

U.S. Cl. 427—386 10 Claims

1. A curable finely divided solid composition comprising (1) an epoxy compound having more than one 1,2-epoxide group and having a lower fusion point of at least 40° C. and (2) 2–15%, by weight, based on the solid epoxy compound, of a blocked polyisocyanate formed by the reaction of a polyisocyanate with a compound of the formula



wherein each R is independently selected from hydrogen, alkyl, cycloalkyl, aralkyl, and aryl radicals.

4,355,059

POLY(ARYLENE SULFIDE) COMPOSITION CONTAINING A POLYOLEFIN

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 24, 1981, Ser. No. 256,874

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—388.2 15 Claims

11. A method for applying a smooth, continuous coating of a poly(arylene sulfide) to a substrate, the method comprising applying to the substrate a continuous layer of an aqueous slurry comprising a major amount of a curable poly(arylene sulfide) and a minor amount, effective to reduce surface defects in the cured coating, of a polyolefin dispersed in an aqueous medium, removing the aqueous medium, and curing the poly(arylene sulfide) on the substrate.

4,355,060

HIGH TEMPERATURE CEMENTITIOUS COATINGS WITH IMPROVED CORROSION RESISTANCE AND METHODS OF APPLICATION

Charles E. Cornwell, 7104 Marian Dr., Alexandria, Va. 22307

Filed Aug. 13, 1981, Ser. No. 292,501

Int. Cl.³ B05D *1/02;* C04B *9/02*

U.S. Cl. 427—427 3 Claims

1. A method of coating a substrate comprising:

(a) establishing a mixture of

(i) a refractory aggregate including magnesia and fly ash and other finely divided minerals and

(ii) ammonium phosphate in aqueous solution, the composition of said phosphates being at best 20% polyphosphates, balance orthophosphate, the amounts of magnesia and phosphates in said mixture being effective to bond all of the aggregates into a solid continuous mixture and,

(iii) metered liquid components;

(b) applying said mixture by air conveying said mixture to a static mixing device wherein said metered liquid components are introduced just before said mixing device, the mixture being conveyed through said mixing device by air pressure and discharged through a spray nozzle onto said substrate resulting in a coating of about 2 mils to about 40 mils thickness.

4,355,061

COMPOSITE TUBULAR ROD AND METHOD FOR MAKING SAME

Myron C. Zeigler, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.

Filed Aug. 13, 1981, Ser. No. 292,494

Int. Cl.³ A01K *87/00, 91/00;* B32B *9/00*

U.S. Cl. 428—36 12 Claims

1. A method for forming a hollow rod having a body portion and a relatively more flexible tip portion with a transition portion longitudinally therebetween and in which said body and tip portions are reinforced with distinctly different filaments that are overlappingly anchored within said transition portion comprising the steps of: providing a first flexible prepreg sheet incorporating a plurality of first reinforcing strands coated, and bonded together, with a flexible latently hardenable resin; providing a second flexible sheet incorporating a plurality of selected second reinforcing strands coated, and bonded together, with a flexible, latently hardenable resin compatible with the resin in said first prepreg sheet; cutting each said sheet to a tapered apex; longitudinally overlaping said tapered apices; simultaneously wrapping said sheets upon a mandrel; and, hardening the resin in said sheets.

4,355,062

BIS(HYDROXYALKYL)DISILOXANES AND LUBRICANT COMPOSITIONS THEREOF

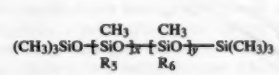
Chih C. Wang, Hightstown, and Ronald F. Bates, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,859

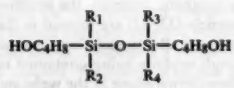
Int. Cl.³ B32B *3/02;* G01D *15/34*

U.S. Cl. 428—64 4 Claims

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record being coated with a methyl alkyl siloxane lubricant having the formula



wherein R_5 and R_6 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x and y is 4 or less, the improvement which comprises adding to said lubricant a bis(hydroxyalkyl)disiloxane having the formula



wherein R_1 and R_3 are methyl or ethyl and R_2 and R_4 are linear alkyl groups of up to 20 carbon atoms.

4,355,063

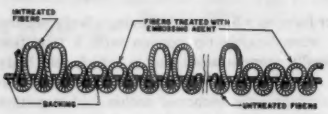
CHEMICALLY EMBOSSED CARPET AND THE METHOD OF CARRYING OUT CHEMICAL EMBOSSING WHILE PRESERVING TEXTURE

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 760,845, Jan. 21, 1977, abandoned, which is a continuation of Ser. No. 666,692, Mar. 15, 1976, abandoned, which is a continuation of Ser. No. 429,949, Jan. 2, 1974, abandoned. This application Aug. 15, 1980, Ser. No. 178,572

Int. Cl.³ B32B *33/00*

U.S. Cl. 428—89 9 Claims



1. In a process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which process comprises,

applying to defined areas of the piled surface of said fabric a chemical embossing agent for said fibers, said agent having the capacity to reduce said fibers in the length to an extent of at least 10 percent of their length,

the improvement which comprises incorporation into a chemical composition with said embossing agent a protective agent for said fibers compatible with the chemical ingredients of said embossing composition and allowing said embossing composition to remain in contact with said fibers for the same total time and temperature employed to reduce the height of said pile and, thereafter, selectively removing said embossing agent from said fabric, said protective agent suppressing the development of hardness, harshness and stiffness in the shrunk fibers.

4,355,064

COVERING MATERIAL

Jörg Imhof, 9601 Arnoldstein Nr. 202, (Kärnten), Austria

Filed Jan. 14, 1980, Ser. No. 112,018

Claims priority, application Austria, Jan. 19, 1979, 400/79

Int. Cl.³ B32B *1/08;* F24J *3/02*

U.S. Cl. 428—178 7 Claims

1. A covering for walls, facades and roofs comprising webs which for the absorption of radiant and environmental heat having flow channels running parallel to each other for a heat transfer medium which flows through the channels and are made of flexible synthetic material, the improvement wherein

additional channels (33, 42) are formed in the webs running approximately parallel to said flow channels (e.g. 31, 37), a flow through medium being contained in the additional channels, the external shape of the webs and the size of the cross section of the additional channels are variable by means of change of the pressure of the medium in said additional channels,

an expandable base foil defining an outer peripheral wall of each of said additional channels, respectively,

a plurality of said flow channels being attached to each of said base foil of said additional channels, respectively, and

a support foil being connected to ends of said base foils, respectively, said support foil forms a bottom peripheral wall of all of said additional channels.

4,355,065

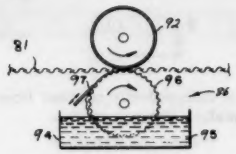
SOIL-RESISTANT TEXTILE MATERIALS

Roy P. DeMott, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 144,152, Apr. 28, 1980, abandoned. This application Apr. 7, 1981, Ser. No. 251,693

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 8 Claims



1. A textile material suitable for use as an automotive upholstery fabric which comprises:

(a) a body portion having a face and a back comprised of synthetic, thermoplastic fibers;

(b) said body portion being provided with a substantially oil and water-repellent fluoropolymer substantially evenly distributed on the face thereof and remaining substantially on or near the face surface of said textile material, said fluoropolymer being provided in a minor amount sufficient to improve soil resistance characteristics but less than an amount which would cause said material to burn at a rate in excess of about 2 inches per minute or to support such burning for longer than about one minute as determined by United States Government Department of Transportation Motor Vehicle Standard Test Number 302; and

(c) said textile material further having been backcoated with a flame-retardant backcoating in an amount sufficient to improve the flammability characteristics of said textile material.

4,355,066

SPOT-BONDED ABSORBENT COMPOSITE TOWEL MATERIAL HAVING 60% OR MORE OF THE SURFACE AREA UNBONDED

Nicholas S. Newman, Cohasset, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 8, 1980, Ser. No. 213,820

Int. Cl.³ B32B *5/26, 7/14, 23/08, 23/10*

U.S. Cl. 428—198 6 Claims

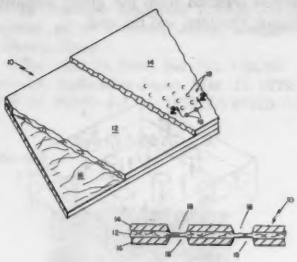
1. An absorbent hydrophilic and oleophilic multipurpose composite towel material comprising:

an inner hydrophilic absorbent layer of cellulosic material; and,

outer layers of microfibrous polyolefin material on opposite sides of said inner layer;

said outer layers being fusion bonded through said inner layer in discreet spot areas said spot bonded areas leaving the unbonded areas more than 60% of the whole and as

large as possible consistant with requirements of material integrity, to produce a bonded composite material having



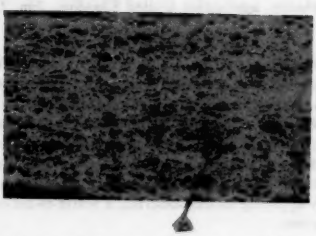
low density and exceptionally high void volume for improved liquid absorbency.

4,355,067

SCOURING MATERIAL

Jean-Louis Neveu, Plerin, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR) and Institut Textile Boulogne-Sur de France, both of Seine, France

Filed Sep. 12, 1980, Ser. No. 186,467
Claims priority, application France, Sep. 20, 1979, 79 23875
Int. Cl.³ B24D *11/02*
U.S. Cl. 428—253 **5 Claims**



1. An improved fibrous scouring material, comprising a fibrous band having a structure of a three-dimensional lattice formed of drawn irregular fibrillated fibers obtained by fibrillation of a polypropylene-based bilaminar film, said fibers being helically crimped and self-bonded together at their mutual contact points and being interconnected by fibrils which are also helically crimped, wherein:

the fibrillated fibers are heat shrunk and include at least one sharp edge,

the thickness of the fibrillated fibers is between 100 and 200 microns, and

the fibrous band has a cavity proportion of at least 75%.

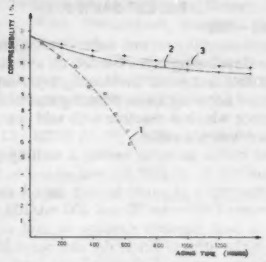
4,355,068

IMPREGNATED GASKET AND METHOD OF PRODUCING

Horst Beyer, and Hans-Reiner Zerfass, both of Burscheid, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 13, 1981, Ser. No. 321,202
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042912
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—290 **9 Claims**

1. In a gasket made of a fibrous and/or porous material impregnated with a polymerizable saturating agent which is partially polymerized only to a plastically deformable consistency, the improvement comprising an additive which prevents complete polymerization and hardening applied to the



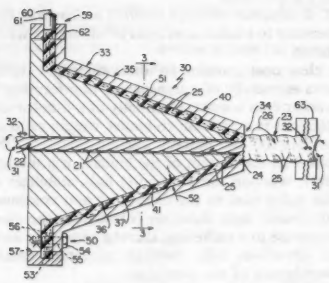
surfaces of said material after impregnation with said saturation agent and partial polymerization.

4,355,069

FLEXIBLE LOAD-CARRYING CORD, APPARATUS AND POLYMERIC CONSTRUCTION UTILIZING SAME

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 17, 1981, Ser. No. 244,530
Int. Cl.³ D02G *3/36*; B60C *9/00*
U.S. Cl. 428—292 **13 Claims**



1. In a flexible load-carrying cord which is adapted for embedment in a polymeric construction said cord comprising a plurality of elements which are twisted in one direction and normally have a tendency to untwist, the improvement comprising a polymeric sleeve bonded around said elements, said sleeve comprising a polymeric matrix having a plurality of discrete randomly arranged fibers embedded therein, said fibers being disposed in a helical pattern which extends in a direction opposite from said one direction, and said sleeve with its fibers serving to substantially eliminate said tendency of said elements to untwist.

9. In a construction made primarily of polymeric material and having a flexible load-carrying cord embedded in at least a portion thereof, said cord comprising a plurality of elements which are twisted in one direction and normally have a tendency to untwist, the improvement comprising a polymeric sleeve bonded around said elements and defining the outer part of said cord, said sleeve comprising a polymeric matrix having a plurality of discrete randomly arranged fibers embedded therein, said fibers being disposed in a helical pattern which extends in a direction opposite from said one direction, and said sleeve with its fibers serving to substantially eliminate said tendency of said elements to untwist.

4,355,070

HEAT-SENSITIVE RECORD MATERIAL

Yoshitaka Oeda, Nara, Japan, assignor to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,655
Int. Cl.³ B41M 5/18
U.S. Cl. 428—323 7 Claims

1. In a heat-sensitive record material comprising a base sheet and a color developing layer formed on at least one surface of said base sheet, said color developing layer comprising

(a) electron donating color forming material,

(b) acceptor which is reactive with said color forming material to develop a color,

(c) a heat fusible material having a melting point within the range of 60° C. to 200° C., and

(d) oil absorptive pigment having an oil absorption within the range of between 80 and 800 ml/100 g, the improvement in said pigment existing in said color developing layer in the form of finely divided particles each having a coating thereon, said coating being formed of said acceptor or said heat fusible material.

4,355,071

CLEAR COAT/COLOR COAT FINISH CONTAINING ULTRAVIOLET LIGHT STABILIZER

David C. Chang, Troy, Mich., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 60,255, Jul. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 902,416, May 3, 1978, Pat. No. 4,208,465. This application May 5, 1980, Ser. No. 146,261
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ B32B 15/08; B44D 1/14
U.S. Cl. 428—334 71 Claims

1. A substrate having a finish of a clear coat top layer in firm adherence to a color coat layer in adherence with the substrate; wherein

the clear coat contains no ultraviolet light stabilizer and consists essentially of a transparent film-forming binder; and

the color coat consists essentially of a film-forming binder and pigment in a pigment-to-binder weight ratio of about 1/100 to 150/100 and initially contains about 1–20% by weight, based on the weight of the binder, of ultraviolet light stabilizer; wherein the ultraviolet light stabilizer migrates from the color coat to the clear coat and continues to do so as ultraviolet light stabilizer is lost from the clear coat due to exposure to weathering, thereby providing an adequate level of ultraviolet light stabilizer to retard deterioration from weathering of the clear coat.

8. The substrate of claims 1, 2, 3, 4, 5, 6, or 7 wherein the color coat is about 0.4–1.5 mils thick and the clear coat is about 0.5–5.0 mils thick.

4,355,072

MAGNETIC HEXAGONAL FERRITE LAYER ON A NONMAGNETIC HEXAGONAL MIXED CRYSTAL SUBSTRATE

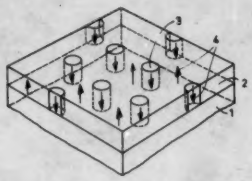
Dieter Mateika, Ellerbek, and Günter Bartels, Pinneberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,030
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005195; Feb. 12, 1980, 3005219
Int. Cl.³ G11B 5/62
U.S. Cl. 428—336 8 Claims

1. A magnetic device comprising a monocrystalline, magnetic layer of a hexagonal ferrite material on a surface of a monocrystalline, nonmagnetic substrate, characterized in that the substrate consists essentially of a hexagonal alkaline-earth gallate mixed crystal with the formula

$$A^{2+}{}_{1+y}Ga_{12-2x-y}B^{2+}{}_{x}C^{4+}{}_{x}O_{19},$$

where A is one or more elements selected from the group consisting of barium and strontium, B is one or more elements selected from the group consisting of magnesium, manganese, zinc, iron, copper, nickel, cobalt, and chromium, C is one or more elements selected from the group consisting of zirconium, hafnium, titanium, and tin, and



$0.1 \leq x \leq 1.2$ and $0 \leq y \leq 0.8$.

4,355,073

ADHESIVE COATINGS OF PREPASTED WALL COVERINGS

Jack A. Knightley, Bozeat, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Jun. 13, 1980, Ser. No. 159,105
Claims priority, application United Kingdom, Jun. 26, 1979, 7922187
Int. Cl.³ C09J 7/02
U.S. Cl. 428—350 10 Claims

1. A prepasted wall covering comprising a substrate and a dry coating, upon said substrate, said coating being activatable as an adhesive paste of said covering upon immersion in water, said coating being microscopically discontinuous and comprising particles of a water soluble synthetic polymer of molecular weight of at least 500,000, said polymeric coating having been prepared by applying to the substrate, a water-in-oil emulsion of said polymer.

4,355,074

BONDING SHEET-LIKE MATERIAL TO A SUBSTRATE FROM WHICH IT CAN BE DRY-STRIPPED

Hermann Stemmler, Walluf, and Volker Knittel, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,666
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926481
Int. Cl.³ C09J 7/02
U.S. Cl. 428—350 21 Claims

1. Dry-strippable sheet-like material in juxtaposition to and coextensive over a substantial proportion of surface area with two contiguous adhesive layers, adhesive of each layer comprising film-forming water-soluble or water-swellable polysaccharide derivative polymer, one layer being that of at least one non-ionic polysaccharide derivative and the other layer being that of at least one ionic polysaccharide derivative; one of the two adhesive layers being interposed between and in direct contact with both the sheet-like material and the other adhesive layer.

4,355,075

NOVEL FILAMENT-LIKE FIBERS AND BUNDLES THEREOF, AND NOVEL PROCESS AND APPARATUS FOR PRODUCTION THEREOF

Susumu Norota; Tsutomu Kiriyama; Tadashi Imoto, and Toshinori Azumi, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 24, 1980, Ser. No. 133,288

Claims priority, application Japan, Mar. 27, 1979, 54/35008; Mar. 27, 1979, 54/35009; Jul. 16, 1979, 54/89315; Sep. 4, 1979, 54/112370

Int. Cl.³ D02G 3/00

U.S. Cl. 428—369 8 Claims

1. A melt-spun filament composed of at least one thermoplastic synthetic polymer, said filament being characterized by having

(1) a non-circular cross-section varying irregularly in both the size and shape of the cross-section at irregular intervals along its longitudinal direction, and

(2) a coefficient of intrafilament cross-sectional area variation [CV(F)] of 0.08–0.7.

4,355,077

PHOTOCURED LAMINA OF UNSATURATED URETHANE/MONOMER ADHESIVE BLEND WITH A TRANSPARENT LAYER

Pierre Chevreux, St. Jean de Gonville, France; Van T. Nguyen, Petit-Lancy, Switzerland; Alain Roman, Bossey, France, and Daniel Turpin, Nyon, Switzerland, assignors to Deltaglass S.A., Geneva, Switzerland

Division of Ser. No. 76,780, Sep. 19, 1979, Pat. No. 4,297,185.

This application Jun. 29, 1981, Ser. No. 278,711

Claims priority, application Switzerland, Sep. 20, 1978, 9815/78

Int. Cl.³ B32B 15/20, 17/10, 21/08, 27/08

U.S. Cl. 428—412 49 Claims

1. A method of bonding a glass face to another face which is of glass or a thin flexible film of transparent plastics, characterised by the steps of:

(i) providing between said faces a layer of a photohardenable composition which is polymerizable by irradiation under u.v. light to provide an adhesive and comprises:

from 10–95% by weight of at least one olefinic photopolymerizable prepolymer which has an olefinic double bond activated by an electrophilic substituent and a molecular weight from about 500 to 10,000, is a substantially linear product derived from an α,β-ethylenically unsaturated acid selected from the group consisting of acrylic acid and alpha-substituted derivatives of acrylic acid, at least one flexible diol and at least one substantially rigid diisocyanate, and has on average one olefinic unsaturation due to the acid per 800 to 3000 of molecular weight,

from 0.001 to 10% by weight of benzophenone,

from 1 to 10% by weight of equimolar amounts of dimethyl aminoethyl methacrylate and acrylic acid, and

more acrylic acid, in an amount of from 0.001 to 60% by weight of the composition, and

(ii) subjecting the layer to u.v. radiation to cure the composition and bond the faces together.

4,355,076

DRY LAMINATION

Duggan J. Gash, Lower Froyle, near. Bentley, England, assignor to Koninklijke Emballage Industrie Van Leer, B.V., Amstelveen, Netherlands

Continuation of Ser. No. 820,893, Aug. 1, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 935,007

Claims priority, application United Kingdom, Aug. 4, 1976, 32559/76

Int. Cl.³ B32B 9/04; C09J 5/02

U.S. Cl. 428—411 10 Claims

1. A two-step method of laminating at least two plastic films of same or different nature, comprising contacting intimately said films by means of pressure rolls at a temperature in the range from ambient up to the melting temperature of the film having the lowest melting point of said films in order to form a low peel strength composite, and subsequently subjecting said composite to a treatment at a temperature within the range from 60° to 180° C., said 60° to 180° C. temperature being below the melting or softening temperature of the constituents in the composite having the lowest melting or softening temperature, in order to form a high peel strength laminate, non-surface treated films being used and the composite of the first step being subjected to the treatment of the second step in a condition substantially free of tension and pressure.

4,355,078

NITRILE ELASTOMER SURFACES RECEPTIVE FOR BONDING BY EPOXY ADHESIVES AND METHOD THEREFOR

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1980, Ser. No. 147,815

Int. Cl.³ B32B 25/02, 25/04, 27/38

U.S. Cl. 428—414 6 Claims

1. A composite structure comprising a nitrile elastomer member portion secured to a second nitrile elastomer member of the composite structure by epoxy adhesive, the surface of the elastomer member portion secured to the second member being treated by a method comprising the steps of:

providing a treating solution comprising a concentration of less than 1.0 N of a mineral acid in a carrier comprising water and one of alcohol and ketones, and

treating the elastomer surface with the treating solution.

3. A method of preparing nitrile elastomer surfaces for bonding by epoxy adhesives comprising the steps of:

providing a treating solution comprising a concentrate of less than 1.0 N of a mineral acid in a carrier comprising water and one of alcohol and ketones, and

treating the elastomer surface with the treating solution.

4,355,079

CORROSION INHIBITION

Arnold M. Rosenberg, Potomac, and James M. Gaidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 77,218, Sep. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 700,344, Jun. 28, 1976, abandoned. This application Apr. 21, 1981, Ser. No. 256,221

Int. Cl.³ B32B 9/00, 15/04

U.S. Cl. 428—469 13 Claims

1. An article consisting essentially of a metal piece coated with a thin film of from about 0.005 to about 0.375 inch thick consisting essentially of calcium nitrite and a cement-free carrier, said composition being applied as a film on the metal piece and said metal being iron, steel, aluminum or aluminum-steel alloy.

4,355,080

POLYESTER-ACRYLIC COMPOSITE SHEET HAVING IMPROVED WEATHERABILITY

Joseph S. Zannucci, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,784

Int. Cl.³ B32B 27/08, 27/18, 27/36

U.S. Cl. 428—483 7 Claims

1. A polyester-polyacrylic composite article comprising a substrate of an amorphous, essentially unoriented polyester material having an inherent viscosity of at least 0.4, having laminated to its surface a film of polyacrylic material prepared from either or both of the monomers $H_2C{=}CHCO_2R$ and $H_2C{=}C(CH_3)CO_2R^1$ wherein R and R^1 are each selected from C_1–C_{12} linear or branched alkyl groups.

4,355,081

CURING OF RESIN IMPREGNATED CELLULOSICS WITH CONTINUOUSLY SUPERHEATED STEAM

Homan B. Kinsley, Jr., Powhatan, Va., assignor to James River Corporation, Richmond, Va.

Filed May 30, 1980, Ser. No. 155,117

Int. Cl.³ B32B 27/42

U.S. Cl. 428—526 25 Claims

1. A process for curing a curable, organic solvent soluble and thermosetting resin impregnated non-textile cellulosic substrate comprising contacting such substrate with an effective amount of a gaseous medium consisting essentially of steam, said steam being in superheated state, and maintaining said substrate in contact with the superheated steam, while also maintaining the steam in said superheated state, for a period of time sufficient to cure the resin impregnated substrate without concomitant condensation of said superheated steam thereon.

22. The product obtained upon curing a phenol-aldehyde resin impregnated non-textile substrate by contacting such substrate with an effective amount of a gaseous medium consisting essentially of steam, said steam being in superheated state, and maintaining said substrate in contact with the superheated steam, while also maintaining the steam in said superheated state, for a period of time sufficient to cure the resin impregnated substrate without concomitant condensation of said superheated steam thereon.

4,355,082

ULTRA-THIN WIRE FOR SEMICONDUCTOR CONNECTIONS

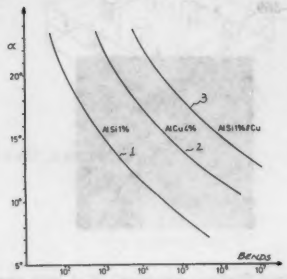
Albrecht Bischoff, Bruchköbel, and Fritz Aldinger, Rodenbach, both of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,528

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023528

Int. Cl.³ H10L 23/48

U.S. Cl. 428—607 10 Claims



1. Ultra-thin bonding wire, particularly for connection to a semiconductor, and having a diameter in the order of about 0.01 to 0.06 mm

comprising, in accordance with the invention,

a core of a material of the group consisting of: copper; copper alloy of at least 60% copper content;

and a jacket of a material of the group consisting of: aluminum, or aluminum alloy of at least 95% aluminum;

all percentages by weight.

4,355,083

ELECTROLESSLY METALLIZED SILVER COATED ARTICLE

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 803,777, Jun. 6, 1977, Pat. No. 4,181,760. This application Dec. 26, 1979, Ser. No. 106,499

Int. Cl.³ B32B 15/04; C23C 3/02

U.S. Cl. 428—621 7 Claims

1. A metallized article, said article being a silver coated ceramic substrate, produced by the steps comprising,

(a) contacting said silver coated ceramic substrate with a composition thereby rendering said substrate receptive to conventional electroless plating and wherein said composition comprises metal ions and only a single reducing agent and wherein said reducing agent is capable of chemically reacting with said silver coated ceramic substrate and the metal ions within said composition and wherein the metal ions are selected from the group consisting of nickel, cobalt, and iron and mixtures thereof, and wherein the relative molar concentration of the reducing agent to the metal ions is so adjusted as to permit the initial chemical interaction of the reducing agent with said silver coated ceramic substrate and then the heterogeneous reduction of some of the metal ions present in said composition and then,

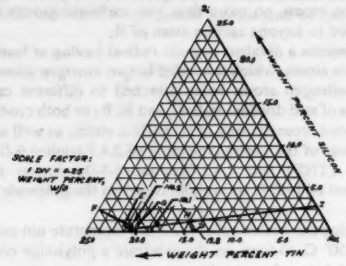
(b) contacting the treated silver coated ceramic substrate with a conventional electroless plating bath thereby depositing a metallic layer and wherein said bath comprises hypophosphite.

4,355,084

LOW TEMPERATURE BRAZE ALLOY AND COMPOSITE

Donald R. Kitchen, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1980, Ser. No. 132,453
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—672 4 Claims



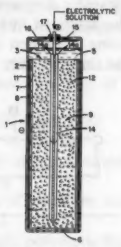
3. An article of manufacture composed of a gold-plated lid bonded to a gold-plated substrate with a braze alloy consisting essentially of about 81.0 to 82.5 weight percent gold, about 0.20 to 0.45 weight silicon, and the balance substantially all tin.

4,355,085

ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corp., Stamford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,212
Int. Cl.³ H01M *2/26*
U.S. Cl. 429—101 13 Claims



1. A carbon cathode structure for an electrochemical cell, comprising:

an elongated porous carbon element having a guide opening extending therealong for a portion of its entire length; and

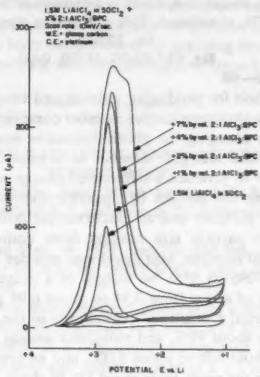
a unitary metal current collector element embedded within the porous carbon element, said metal current collector element comprising first and second elongated, spaced-apart, tapered, resilient spring members joined together at first ends thereby to define a tapered central opening therebetween and a generally V-shaped, tapered form for the current collector member, said first and second spring members lying along and within the guide opening in the porous carbon element and having portions at the tapered joined ends of the first and second spring members physically inserted within the material of the carbon element and extending beyond the termination of the guide opening in the carbon element, said first and second spring members being operative when embedded within the carbon element to exert an outwardly directed force against internal portions of the carbon element.

4,355,086

LITHIUM THIONYL CHLORIDE BATTERY

Deidrich J. Santhoff, Eagan, and Hanumanthiya V. Venkatasetty, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 1, 1981, Ser. No. 307,480
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—105 7 Claims



1. In an electrochemical cell having a lithium anode, a cathode and an electrolyte including lithium aluminum chloride and thionyl chloride, the improvement comprising the addition of a mixture of aluminum chloride and n-butyl pyridinium chloride to the electrolyte.

4,355,087

COLOR IMAGING DEVICE HAVING A COLOR FILTER ARRAY USING A METAL SALT OF A LONG-CHAIN FATTY ACID AS A BARRIER

Thomas W. Martin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,371
Int. Cl.³ G03F *5/00*
U.S. Cl. 430—7 14 Claims

1. A color imaging device comprising a support having a radiation-sensitive surface having superimposed thereon a color filter array having at least two sets of filter elements wherein at least one of said filter elements comprises a dyed element of a dyeable composition wherein:

said dyeable composition comprises at least one compound having coordination sites for metal ions and

the outermost surface of the elements of at least one set of filter elements comprises a metal salt of a long-chain fatty acid wherein the metal of the salt is coordinated to said coordination sites in said dyeable composition.

4,355,088

POLYETHYLENE PRESSURE FIXABLE ELECTROSCOPIC PRINTING POWDER AND PRESSURE FIXING METHOD

Virgil W. Westdale, Barrington, Ill., and John Novotny, Jr., Denville, N.J., assignors to Am International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 782,609, Mar. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 655,466, Feb. 5, 1976, abandoned, which is a division of Ser. No. 437,273, Jan. 28, 1974, abandoned. This application Apr. 23, 1979, Ser. No. 32,647

Int. Cl.³ G03G *13/20, 9/08*

U.S. Cl. 430—98 15 Claims

1. A method for producing a developed image of a graphic original on a photoconductive member comprising the steps of:

uniformly charging the photoconductive member;

exposing the charged member to a pattern of light and shadow to produce a differential charge pattern thereon;

developing the pattern by applying thereto a mixture of carrier particles and an electroscopic powder having an average particle size ranging from under 1 micron to about 50 microns, said developer powder including from about 70% to 95% by weight of a polyolefin having a density of about from 0.94 to about 0.98 gram per cubic centimeter, a degree of crystallinity in the range of about 75% to about 98%, and molecular weight in the range of from about 800 to about 5,000, and an orienting coloring agent in the range from about 1% to about 10% by weight of the powder, where the ratio by weight of the powder to the carrier is in the range of from about 1:15 to about 1:80, and

fixing the developed powder image by means of pressure alone.

4,355,089

PROCESS FOR PRODUCING A PHOTOCONDUCTIVE POLYIMIDE COATING UPON A SUBSTRATE

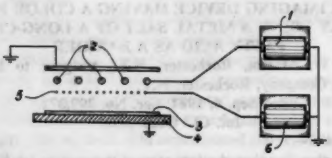
Jan van Turnhout, Pijnacker, and Ramesh C. Ahuja, Delf; both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer, Delft, Netherlands

Filed Aug. 8, 1978, Ser. No. 931,919

Claims priority, application Netherlands, Aug. 9, 1977, 7708786

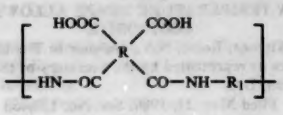
Int. Cl.³ C08G *63/04*

U.S. Cl. 430—130 5 Claims



1. A process for producing upon a substrate a photoconductive coating of polyimide containing as a photosensitizer a member selected from the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone, said process comprising:

(1) coating the substrate with a solution in an organic solvent of a polyamic acid having recurring units of the formula:



wherein

R is a tetravalent organic radical containing at least two carbon atoms, no more than two carbonyl groups being bonded to anyone carbon atom of R,

R_1 represents a divalent organic radical having at least two carbon atoms, which is bonded to two nitrogen atoms, the said nitrogen atoms being attached to different carbon atoms of said divalent radical, and R, R_1 or both contain at least one aromatic ring of six carbon atoms, as well as of a member of the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone in an amount of 1–50% by weight, based on the polyamic acid, and

(2) heating the coated substrate at a temperature not exceeding 150° C. to form on the substrate a polyimide coating containing a photosensitizer.

4,355,090

METHOD FOR MAKING A DIFFUSION TRANSFER LITHOGRAPHIC PRINTING PLATES WITH OXAZOLIDONES

Shoji Yamada; Eiji Kanada, both of Nagaokakyo, and Kozo Haino, Kyoto, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

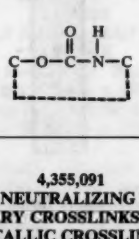
Filed Jul. 1, 1980, Ser. No. 164,938

Claims priority, application Japan, Jul. 4, 1979, 54/84744

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—204 8 Claims

1. Method for making a lithographic printing plate by the silver salt diffusion transfer development process after exposure of the plate, characterized in that the diffusion transfer development processing is carried out in the presence of a compound having the ring structure of the formula:



4,355,091

POLYMERIC NEUTRALIZING LAYER WITH TEMPORARY CROSSLINKS FROM AN ORGANO-METALLIC CROSSLINKING AGENT

William T. MacLeish, North Andover, and Ehud Shchori, Brookline, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 25, 1980, Ser. No. 181,062

Int. Cl.³ G03C *1/400, 7/00, 5/54*

U.S. Cl. 430—216 36 Claims

1. An element adapted for use in a film unit of a photographic diffusion transfer process which comprises a sheet-like support and a polymeric neutralizing layer bonded to said support, said polymeric neutralizing layer being a polymeric acid formed by radiation polymerization of a radiation-polymerizable composition and containing, within the polymeric layer, temporary cross-links from an organometallic cross-linking agent which effect resistance to nonalkaline hydrolysis under film unit assembly conditions and which are subject to substantial degradation under conditions of alkali hydrolysis during film unit processing.

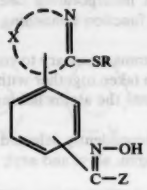
4,355,092

NOVEL PHENYLMERCAPTOAZOLE COMPOUNDS

Avinash C. Mehta, Belmont; George H. Nawn, Westwood, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,543
Int. Cl.³ G03C 5/54, 1/06
U.S. Cl. 430—219 25 Claims

1. A photographic element comprising a support and at least one layer thereon containing a silver halide emulsion having associated therewith a compound represented by the formula



wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a 5- or 6-membered heterocyclic ring, R is H, an alkali metal or a group which is cleavable in aqueous alkaline medium and Z is H, alkyl having from 1 to 10 carbon atoms, aralkyl, phenyl or substituted phenyl.

4,355,093

LAMINATE USEFUL FOR THE PRODUCTION OF PRINTING PLATES AND RELIEF PLATES

Heinrich Hartmann, Limburgerhof; Gerhard Hoffmann, Otterstadt; Werner Lenz, Bad Durkheim; John Lynch, Monsheim, and Herbert Naarmann, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,707
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015419
Int. Cl.³ G03C 1/68
U.S. Cl. 430—275 4 Claims

1. A laminate suitable for the production of printing plates and relief plates, comprising

(a) a photosensitive layer of a mixture, soluble in water or in an aqueous solution, of

(a_1) at least one hydrophilic polymeric binder, together with

(a_2) at least one photopolymerizable ethylenically unsaturated monomer compatible therewith, and

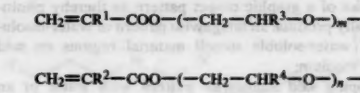
(a_3) a photoinitiator which can be activated by actinic light,

(b) a dimensionally stable base, and

(c) a thin intermediate layer between layers (a) and (b), which is formed from a mixture containing

(c_1) a polymeric binder which is compatible with the hydrophilic polymeric binder (a_1) of layer (a) and contains not less than 30% by weight, based on the total amount of binder (c_1), of a reaction product of a polyvinyl alcohol with acrylic anhydride and/or methacrylic anhydride, which reaction product possesses from 3 to 30%, of its weight, of lateral acrylyl and/or methacrylyl groups, and

(c_2) from 1 to 25% by weight, based on the mixture of (c_1) plus (c_2), of at least one photopolymerizable ethylenically unsaturated monomer compatible with (c_1) and selected from the group consisting of the hydroxyalkyl acrylates, where alkyl is of 2 or 3 carbon atoms, the hydroxyalkyl methacrylates, where alkyl is of 2 or 3 carbon atoms, and the monomers of the formula



where R^1, R^2, R^3 and R^4 may be identical or different and each is H or C_1–C_8-alkyl, X is C_2–C_7-alkylene, a divalent aromatic C_6–C_{10}-hydrocarbon radical or isophoronylene, and m and n are each integers from 1 to 4 and may be identical or different, the intermediate layer being formed by applying its constituent mixture to the base (b) and then curing it at from 110° to 220° C.

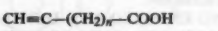
4,355,094

POSITIVE RADIATION SENSITIVE RESIST TERPOLYMERS

Thomas R. Pampalone, Belle Mead, and Kurt B. Kilichowski, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,104
Int. Cl.³ G03C 1/00; B05D 3/06; C23F 1/00
U.S. Cl. 430—286 8 Claims

8. A positive recording medium comprising a substrate and a radiation sensitive film applied to a surface of the substrate, said film comprised of a terpolymer comprising an organic monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component being comprised of 3-methylcyclopentene, and an omega alkynoic acid represented by the formula



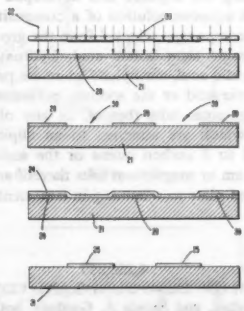
wherein n is an integer from 1 to 20.

4,355,095

METHOD FOR PRODUCING A PHOTOMECHANICAL COLOR IMAGE USING A STRIPPABLE PHOTOSTENCIL AND WATER-PERMEABLE, WATER-INSOLUBLE COLOR MEDIA

William W. Cousins, 26 Norwich Dr., Apt. G, Rochester, N.Y. 14624

Filed Nov. 26, 1980, Ser. No. 210,748
Int. Cl.³ G03C 5/04
U.S. Cl. 430—293 31 Claims



1. A method for directly forming a color reproduction of a graphic object pattern on a support medium, comprising the steps of:

(a) forming a coating layer of water-soluble photosensitive stencil material on at least a portion of said support medium, said water-soluble photosensitive stencil material being rendered water-insoluble by actinic radiation;

(b) single exposing said coating layer to actinic radiation imagewise of a graphic object pattern to thereby photographically produce an imagewise pattern of water-insoluble and water-soluble stencil material regions on said support medium;

(c) developing said imagewise pattern with water or an aqueous alkaline solution to remove the water-soluble stencil material regions of said imagewise pattern to thereby form a stencil image of said object pattern on said support medium, said image being of water-insoluble stencil material and defining areas having no stencil material on said support medium;

(d) overcoating with a layer of a water-permeable, water-insoluble color medium selected from the group consisting of inks, paints and dyestuff solutions of a desired image color at least a portion of said water-insoluble stencil material image and of said defined areas having no stencil material;

(e) treating the overcoated portion of said water-insoluble stencil material with water or an aqueous alkaline solution to permeate the color medium and soften the water-insoluble stencil material; and

(f) removing by mechanical action said softened water-insoluble stencil material along with the color medium layer overlying it, while leaving said color medium layer intact as a color image on said defined areas, whereby a color reproduction of said graphic object pattern is directly formed on said support medium.

4,355,096

PROCESS FOR HEATING EXPOSED AND DEVELOPED LIGHT-SENSITIVE LITHOGRAPHIC PRINTING PLATES WITH CARBOXYLIC ACID AND AMINE MOIETY CONTAINING COMPOUNDS ON SURFACE THEREOF

John E. Walls, Annandale, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 11, 1980, Ser. No. 167,615
Int. Cl.³ G03F *7/08, 7/10*
U.S. Cl. 430—302 **6 Claims**

1. A process for producing a lithographic printing plate comprising exposing and developing a light sensitive printing plate sensitized by a composition containing a compound selected from the group consisting of o-quinone diazides, diazonium salts, azide compounds, or photopolymerizable compounds; coating the exposed and developed surface of said plate with an aqueous solution of a composition comprising one or more compounds selected from the group consisting of ethylene diamine tetra acetic acid, hydroxyethyl ethylene diamine tri-acetic acid, diethylene tri-amine penta-acetic acid, nitrilo tri-acetic acid or the sodium, potassium, lithium, calcium or magnesium salts thereof, or any of the preceding compounds which are attached to an aliphatic compound comprising 2 to 8 carbon atoms or the sodium, potassium, lithium, calcium or magnesium salts thereof and then subjecting said coated plate to a burning-in treatment.

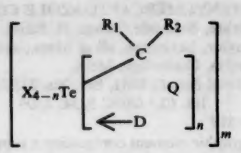
4,355,097

TELLURIUM (IV) COMPOUNDS AND COMPOSITIONS

Henry J. Gysling, and Sylvia A. Gardner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 894,863, Apr. 10, 1978, Pat. No. 4,239,846.
This application Aug. 25, 1980, Ser. No. 181,324
Int. Cl.³ G03C *1/00*
U.S. Cl. 430—495 **2 Claims**

1. A photographic element comprising a support having thereon a layer comprising a photosensitive tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1 or 2; and

m is an integer from 1 to 500.

4,355,098

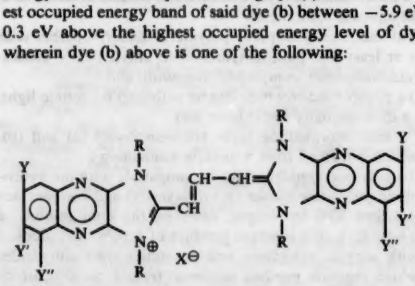
SUPERSENSITIZING DIRECT POSITIVE DYE COMBINATIONS

James W. Wheeler, Fairport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1981, Ser. No. 233,657
Int. Cl.³ G03C *5/24*
U.S. Cl. 430—510 **5 Claims**

1. A direct positive silver halide element comprising a support and at least one direct positive silver halide emulsion coated thereon, said emulsion comprising fogged, gelatino-silver halide emulsion grains and a pair of sensitizing dyes providing improved spectral sensitivity in the green and red portion of the visible spectrum, characterized in that said dye pair consists of a supersensitizing amount of a spectral sensitizing dye (a) having a solution absorption maximum less than 495 nm, and with its lowest vacant energy band being less than −3.7 eV, and in combination therewith a sensitizing amount of a spectral sensitizing dye (b) having a lowest vacant energy band between −3.7 eV and 0.3 eV below the lowest vacant energy band of said supersensitizing dye (a) and with the highest occupied energy band of said dye (b) between −5.9 eV and 0.3 eV above the highest occupied energy level of dye (a), wherein dye (b) above is one of the following:

I.



wherein

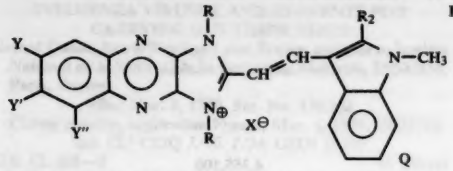
Y and Y′=—H, —Cl or —NO_2; Y″=—H, and

Y′ and Y″ together=phenyl;

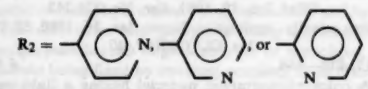
R=alkyl, phenyl, alkenyl, or hydroxyalkyl; and

X is an anion selected from the group consisting of $Cl^{\ominus}$, $Br^{\ominus}$, p-toluene sulfonate, ($PTS^{\ominus}$), $ClO_4^{\ominus}$, and tetraphenyl borane ($BPh_4^{\ominus}$);

II.



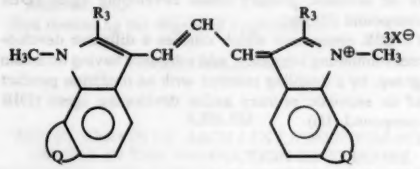
wherein



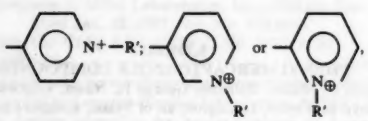
and

Q represents sufficient carbon atoms to form a phenyl group;

III.



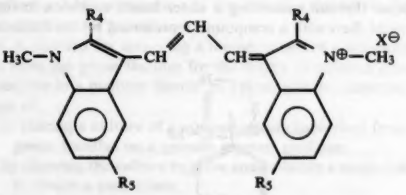
wherein



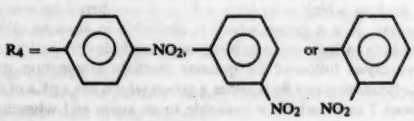
and

R′ is —H or alkyl, e.g., —CH_3;

IV.



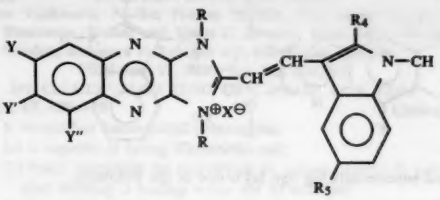
wherein



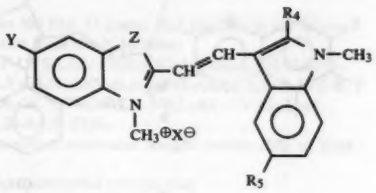
and

R_5=—H or —NO_2;

V.

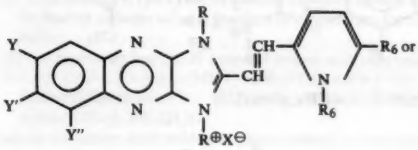


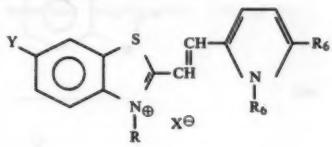
or



wherein Z=S or $C(CH_3)_2$;

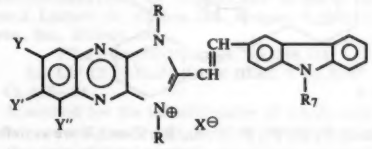
VI.





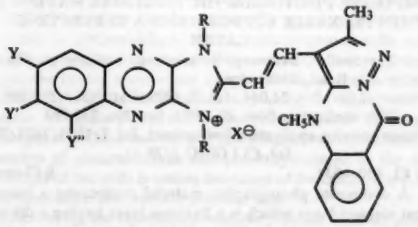
wherein R_6=H, —CH_3, or aryl;

VIII.



wherein R_7=—CH_3 or —CH_2—CH_3;

VIII.



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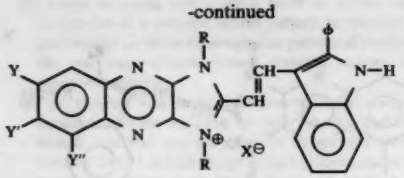
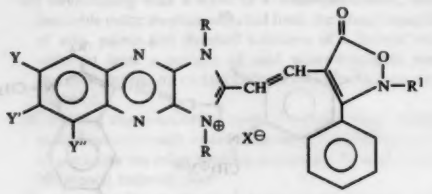
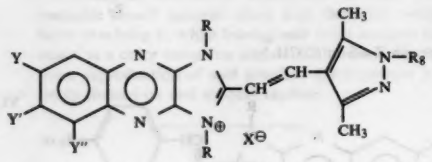
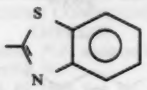
IX. 

and supersensitizing dye (a) is one of the following:

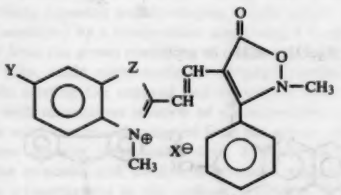
A. 

B. 

wherein R_8 = —CH_3, phenyl, or



and

C. 

and wherein Y, Y', Y'', R, R', R_4, R_5, Z and X are as defined above.

4,355,099

COMPOSITE PHOTOGRAPHIC MATERIAL HAVING A THIN FLEXABLE SUPPORT AND A REFLECTING LAYER

Franz Trautweiler, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 54,044, Jul. 2, 1979, Pat. No. 4,296,198. This application Nov. 29, 1981, Ser. No. 278,792

Claims priority, application Switzerland, Jul. 7, 1978, 7421/78

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—531 **9 Claims**

1. A composite photographic material comprising a transparent support layer which is a flexuous layer having a thickness of from about 5μ to 50μ, a light reflective layer and a photosensitive layer said reflective layer being between the support layer and the photosensitive layer.

4,355,100

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Sugita; Shizuo Saito, both of Hachioji; Ryosuke Sato, and Kiyoshi Yamashita, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,243

Claims priority, application Japan, Jan. 16, 1980, 55-3163

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—544 **6 Claims**

1. A color photographic material having a light-sensitive silver halide emulsion layer coated on a support, which comprises

(1) a DIR compound which releases a diffusive development-inhibiting substance, said substance having an amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (I)) and

(2) a DIR compound which releases a diffusive development-inhibiting substance, said substance having no amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (II)).

4,355,101

PHENYLMERCAPTOAZOLE COMPOUNDS

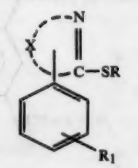
Avinash C. Mehta, Belmont; George H. Nawn, Westwood, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,542

Int. Cl.³ G03C *5/54, 1/06*

U.S. Cl. 430—564 **5 Claims**

1. A photographic element comprising a support and at least one layer thereon containing a silver halide emulsion having associated therewith a compound represented by the formula



wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a 5- or 6-membered heterocyclic moiety, R is a group which is cleavable in aqueous alkaline medium by hydrolysis or by quinone methide elimination or by hydrolysis followed by quinone methide elimination or by β-elimination and R_1 is either a group which has a pKa of from about 7 to 14 which is ionizable to an anion and wherein the silver salt of the mercaptan resulting from cleavage of —SR is more soluble in the pH range within which R_1 is ionized to an anion than it is below that pH range, or a precursor thereof.

4,355,102

AGGLUTINATION TESTS FOR DETECTING INFLUENZA VIRUSES, AND REAGENTS FOR CARRYING OUT THESE TESTS

Gerard Quash, Sainte Foy-Les Lyon, France, assignor to Institut National de la Sante et de la Recherche Medicale, INSERM, Paris, France

Filed Mar. 5, 1980, Ser. No. 128,232
Claims priority, application France, Mar. 6, 1979, 79 05703
Int. Cl.[3] C12Q *1/70, 1/34;* G01N *33/00*
U.S. Cl. 435—5 16 Claims

1. A process for detecting influenza viruses by means of an agglutination test, comprising:

adding influenza virus or allantoic liquid containing said virus, to a reagent comprising a neuraminidase substrate capable of being hydrolyzed by neuraminidase and having at least one sialic acid group and being a mucoprotein, mucopolysaccharide, oligosaccharide or mucolipid, said substrate being fixed by covalent coupling to an insoluble solid support selected from the group consisting of latex spheres, agarose or dextran gel beads, and activated glass marbles;

incubating the influenza virus with the substrate for a time sufficient to permit an agglutination reaction to take place between the neuraminidase and the solid support-coupled substrate; and

then measuring the degree of agglutination.

4,355,103

NOVEL STRAIN OF *BACILLUS LICHENIFORMIS* USEFUL IN THE PRODUCTION OF GLUCOSE ISOMERASE AND METHOD OF SCREENING BACILLUS MUTANTS FOR ABILITY TO PRODUCE GLUCOSE ISOMERASE IN THE ABSENCE OF XYLOSE

George Boguslawski, and Michael J. Rynski, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 23, 1981, Ser. No. 227,686
Int. Cl.[3] C12Q *1/04;* C12N *15/00, 9/92, 1/20*
U.S. Cl. 435—34 7 Claims

1. A biologically pure culture of an asporogenic bacterium from the genus and species *Bacillus licheniformis* ATCC 31667 which is further identified by being resistant to 2-deoxyglucose, is capable of producing glucose isomerase in greater quantities in a fermentation medium containing appropriate nutrients which medium is devoid of xylose than in a medium with xylose present and whose nutritional demands include the requirement of methionine and the vitamins niacin, riboflavin and thiamine for growth.

4. A method for screening a mutant strain of a microorganism from the genus Bacillus for the ability to produce glucose isomerase in a medium devoid of xylose which comprises the steps of:

(a) placing a culture of a nonpathogenic bacterium from the genus Bacillus on a growth support medium;

(b) allowing the culture to grow and isolating a single colony to obtain a pure clone;

(c) streaking a single colony of the pure clone on a growth support medium containing 2-deoxyglucose;

(d) recovering one or more 2-deoxyglucose resistant variants from the growth support medium used in step (c);

(e) purifying the 2-deoxyglucose resistant variant obtained in step (d) by restreaking it on a growth support medium containing 2-deoxyglucose to thereby eliminate nonresistant dormant cells;

(f) recovering the purified variant from the growth support medium used in step (e); and

(g) determining the ability of the purified variant to produce glucose isomerase in a growth support medium devoid of xylose.

4,355,104

BACTERIOLYTIC PROTEINS

Dan Hultmark, Nacka; Hakan Steiner, Vallentuna; Torgny Rasmuson, Umea, and Hans G. Boman, Stockholm, all of Sweden, assignors to Kabigen AB, Stockholm, Sweden

Filed Jun. 17, 1980, Ser. No. 160,393
Int. Cl.[3] C12P *21/00, 21/02;* C07C *103/52;* A61K *37/02*
U.S. Cl. 435—70 6 Claims

1. A purified bactericidal protein that

(a) is capable of lysing *Escherichia coli;*

(b) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) comprises the first 33 amino acid residues in the following sequence from the N terminal

N-LYS-TRP-LYS-LEU-PHE-LYS-LYS-ILE-GLU-LYS-VAL-GLY-GLN-ASN-ILE-ARG-ASP-GLY-ILE-ILE-LYS-ALA-GLY-PRO-ALA-VAL-ALA-VAL-VAL-GLY-GLN-ALA-THR-

(e) has a monomer molecular weight within 20% of 3564 daltons.

2. A purified bactericidal protein that

(a) is capable of lysing *Escherichia coli;*

(b) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) the monomer has the N terminal amino acid sequence

N-LYS-TRP-LYS-VAL-(MET)-ILE-(PHE)-LYS-LYS-ILE-(PHE)-GLU-LYS- -GLY-ARG-ASN-ILE-(PHE)-ARG-ASN-(LYS)-GLY-

wherein the amino acid residue in parenthesis is an alternative to the immediately preceeding amino acid residue;

(e) has a dimer molecular weight within 20% of 7000 daltons.

4,355,105

GLUTARALDEHYDE/POLYETHYLENIMINE IMMOBILIZATION OF WHOLE MICROBIAL CELLS

Oreste J. Lantero, Jr., Goshen, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 30, 1981, Ser. No. 248,718
Int. Cl.[3] C12P *19/24;* C12N *11/00, 9/90, 9/92*
U.S. Cl. 435—94 8 Claims

1. A method for the immobilization of whole cells of an enzyme producing microorganisms whose enzyme is selected from the group of sucrose mutase and glucose isomerase which method comprises the steps of:

(a) providing an aqueous medium containing whole cells of the microorganism;

(b) adding glutaraldehyde to the aqueous medium and allowing sufficient time for the formation of a reaction product between the glutaraldehyde and the microorganism cells; adding polyethylenimine to the aqueous medium said polyethylenimine having a molecular weight within the range of from 1,800 to 60,000 and in sufficient quantity so that the mole ratio of glutaraldehyde to polyethylenimine monomer ranges from 3.9:1 to 0.4:1 and the weight ratio of the combination of glutaraldehyde and polyethylenimine to the dry weight of the cells is within the range of from 0.20:1 to 0.7:1 to flocculate the reaction product; and

(d) recovering the flocculated reaction product from the aqueous medium by filtration.

4,355,106

CONTINUOUS PROCESS FOR THE PRODUCTION OF GELABLE EXOPOLYSACCHARIDE

Hugh G. Lawford, Mississauga, Canada, assignor to George Weston Limited, Toronto, Canada

Filed Jan. 12, 1981, Ser. No. 223,960
Int. Cl.³ C12P 19/04; C12R 1/05
U.S. Cl. 435—101 5 Claims

1. A two-stage continuous process for the production of a gelable curdlan-type exopolysaccharide in which

(1) a stable, curdlan-producing strain of microorganism is grown aerobically under conditions of continuous culture at pH 6 to 8 and at a temperature of from 22° to 37° C. in an aerated, agitated culture medium containing assimilable carbon, nutrients, and inorganic salts and also containing nitrogen in an amount so limited that the effluent from the first stage contains substantially no inorganic nitrogen, and continuously

(2) introducing the effluent into a constant volume fermenter wherein it is mixed with a nitrogen-free carbohydrate, the resultant mixture is aerated and mixed at pH 5.5. to 6.5 at a temperature of from 25° to 35° C., the volume and dilution rate in the reactor being selected so that the residence time of the microorganism in the fermenter does not exceed an equivalent to the maximum length of time during which the activity of a batch culture of the microorganism with respect to product synthesis is maximal, and subsequently isolating the product.

4,355,107

PRODUCTION OF MUCONIC ACID

Peter C. Maxwell, New Providence, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,343
Int. Cl.³ C12P 7/44
U.S. Cl. 435—142 9 Claims

1. A process for the production and accumulation of muconic acid which comprises supplying toluene and molecular oxygen to a buffered aqueous medium containing a fluorescent Pseudomonas microorganism strain having the following identifying characteristics:

(a) possesses catechol 1,2-oxygenase enzyme with activity that is not inhibited in the presence of a low level of muconic acid in a growth medium;

(b) lacks active catechol 2,3-oxygenase enzyme;

(c) lacks active muconate lactonizing enzyme;

(d) cells are rod shaped, vigorously motile and polarly flagellated; and

(e) cells grow well on p-hydroxybenzoate whereby muconic acid is produced and accumulated in a recoverable amount.

4,355,108

ETHANOL PRODUCTION WITH AN IMMOBILIZED CELL REACTOR

James L. Gaddy, Rolla, and Oliver C. Sitton, House Springs, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed May 22, 1980, Ser. No. 152,365
Int. Cl.³ C12P 7/10; C12N 11/14, 11/06; C12M 1/40
U.S. Cl. 435—165 11 Claims

1. A process for producing ethanol from cellulosic material containing pentosans and hexosans comprising treating the cellulosic material in a first hydrolysis stage with a dilute acid solution to hydrolyze the pentosans to xylose without substantial hydrolysis of hexosans to glucose, separating solids from the resultant hydrolyzate, treating the solids in a second hydrolysis stage with a concentrated acid solution to hydrolyze the hexosans to glucose, and fermenting the glucose to ethanol by passing a solution of the glucose over a fixed film of yeast organisms which ferment said glucose to ethanol, said film of organisms being prepared by coating a solid support with proteinaceous material having free amino groups, treating the proteinaceous material with a polyfunctional agent which is capable of reacting with free amino groups and inoculating the treated proteinaceous material with an inoculum of the yeast organisms, said yeast organisms having free amino groups and said polyfunctional agent reacting with free amino groups contained by the proteinaceous material and the yeast organisms said inoculum being added from solution before the reaction between the polyfunctional agent and the proteinaceous material has substantially gone to completion whereby the yeast organisms are attached to the proteinaceous coat by the polyfunctional agent such that a substantial number of bonds are formed between the yeast and the proteinaceous coat.

4,355,109

MICROBIOLOGICAL PRODUCTION OF NOVEL BIOSURFACTANTS

James E. Zajic, The University of Texas, El Paso, Tex. 79968; Donald F. Gerson, Basel Institute for Immunology, 487 Grenzacherstrasser, Ch-4005, Basel 5, Switzerland; Richard K. Gerson, Micro-Biology Department, MacDonald College, McGill University, St. Anne du-Bellevue, Montreal, Quebec, Canada (H3C 3G1), and Chandrakant J. Panchal, Brewery Research, Labatt Breweries, 150 Simcoe St., London, Ontario, Canada (N6A 4M3)

Filed Apr. 22, 1980, Ser. No. 142,779
Claims priority, application Canada, Apr. 23, 1979, 326112
Int. Cl.³ C12P 1/04
U.S. Cl. 435—170 6 Claims

1. A process for microbiological production of surfactant materials, which comprises cultivating by aerobic fermentation, in a growth promoting medium and under growth promoting conditions, and on a carbon-containing substrate, the microbial strain *Corynebacterium Salvinicum* strain SFC, said microbial strain being characterised by ability to metabolize the waxy protective coating of the plant cuticles of Salvinica water plant under normal growth conditions for the microbial strain, to produce a surfactant material of microbiological origin in said fermentation medium, and recovering the surfactant material so produced from said fermentation medium.

4,355,110

PREPARATION OF DEBRANCHING ENZYME FROM RICE FOR PRODUCING A LOW CALORIE BEER

William F. Line, Greenfield, Wis.; Vinod K. Chaudhary, Manhattan, Kans.; Etzer Chicoye, Milwaukee, and Robert J. Mizerak, Waukesha, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 141,536, Apr. 18, 1980, abandoned, and Ser. No. 58,823, Jul. 19, 1979, abandoned. This application May 13, 1981, Ser. No. 263,154
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.³ C12N 9/44; C12C 9/00, 11/04
U.S. Cl. 435—210 3 Claims

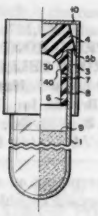
1. The method of extracting a debranching enzyme of high specific activity from rice which comprises selecting as the starting material a member selected from the class consisting of polished rice and malted rice, slurrying the rice in a 0.1 M potassium phosphate-0.2 M sodium chloride buffer system having a pH of 6 at a temperature of about 50° C. for about 3 hours to obtain an extract containing the debranching enzyme, clarifying the extract by centrifugation and retaining the supernatant which contains the enzyme.

4,355,111

MICROORGANISM CULTURING DEVICE

Masaki Shimizu, Tokyo, and Takeo Nomura, Hino, both of Japan, assignors to Terumo Corporation, Japan

Filed May 28, 1980, Ser. No. 153,919
Claims priority, application Japan, Jun. 4, 1979, 54/69713; Apr. 1, 1980, 55/42163
Int. Cl.³ C12N 1/00
U.S. Cl. 435—243 19 Claims



1. A microorganism culturing device comprising:

a vessel with an opening, said vessel having a projection at the inner portion of said opening;

a culture medium contained in said vessel for culturing microorganisms; and,

a stopper member hermetically sealing said vessel in the opening thereof, said stopper member having a through hole for communicating with the inner atmosphere of said vessel, said through hole having one end open at a side wall of said stopper, said stopper member further having an annular groove around the peripheral well below the through hole engageable with the projection at the inner portion of the opening on the vessel;

wherein said stopper member is readily slidable along the inner wall of said vessel by means of gas pressure exerted on said stopper from within said vessel, to a point where said through hole establishes communication of the inside atmosphere of said vessel with the outside atmosphere at or above the tip end of said vessel;

whereby said through hole is in a state of being closed by the inner wall of said vessel at the start of the culturing, preventing communication of the inside atmosphere of said vessel with the outside atmosphere, and establishes communication of the inside atmosphere of said vessel with the outside atmosphere by forcing said stopper member upwards by means of the pressure on the gases produced during culturing to shift said one end of the through hole to or above a tip end of said vessel, thereby discharging said gases from the inside of said vessel to the outside through said through hole.

4,355,112

STREPTOMYCES CULTURE

Yasushi Okumura, Kamakura; Kazuhiko Okamura, Yamato; Yasuo Fugakawa, Kamakura; Tomoyuki Ishikura, Chigasaki; Kageaki Kouno, Tokyo, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd. and Panlabs, Inc., both of Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 803,922
Int. Cl.³ C12N 1/20
U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of Streptomyces sp. P8648 (FERM-P3562; ATCC 31289).

4,355,113

OVER THE COUNTER SWAB KIT FOR SELF DETECTION OF GONORRHEA IN THE MALE USING SALINE AMPULE

Frederick C. Mennen, 506 Clay St., La Porte, Ind. 46350

Filed Jun. 19, 1981, Ser. No. 275,170
Int. Cl.³ G01N 33/50
U.S. Cl. 435—295 5 Claims

1. A self-contained swab cartridge apparatus for the detection and diagnosis of living gonorrhea bacteria by chromogenic reaction with a substantially colorless phenylenediamine hydrochloride salt impregnated pledget without transport of said bacteria from the sampling swab used for collecting the sample comprising of exudate from the penis of the male, said apparatus comprising:

a tubular flexible cartridge having a closed end and an open end holding a frangible ampul of sterile saline solution in a dosage volume sufficient to transport said chromogenic salt in solution;

an ampul made of frangible material filled with a unit dosage of about 1 milliliter of sterile saline for transporting said chromogenic salt brought into solution;

a pledget of fibrous material in the form of a wad containing said chromogenic salt between said ampul and said swab;

a swab protruding from the open end of said cartridge; and

indented holding means on said cartridge adjacent said pledget to hold said pledget in contiguous relation to said swab whereby the exudate sampled on said swab is detected after the breaking of said ampul which dissolves said chromogenic salt contained on said pledget by said saline solution to permeate said swab and provide a color diagnosis within less than 3 minutes for the presence of endogenous cytochrome oxidase constituting the metabolite of *Neisseria gonorrhea*.

4,355,114

PARTIALLY DEVITRIFIED PORCELAIN CONTAINING $BAO.2MGO.2SIO_2$ AND $2MGO.B_2O_3$ CRYSTALLINE PHASES OBTAINED FROM ALKALI METAL FREE DIVALENT METAL OXIDE BOROSILICATE GLASS

Kenneth W. Hang, Princeton Junction, and Wayne M. Anderson, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 91,091, Nov. 5, 1979, Pat. No. 4,256,796. This application Mar. 11, 1981, Ser. No. 242,418
Int. Cl.³ C03C 3/22, 3/10
U.S. Cl. 501—5 4 Claims

1. A partially devitrified porcelain which is free to substantially free of alkali metal oxide, said porcelain having an oxide composition consisting essentially of:

(a) from about 6 to about 25 mole percent of barium oxide;

(b) from about 30 to about 60 mole percent of MO wherein MO is a member selected from the group consisting of magnesium oxide and mixtures comprised of at least 50–70 mole percent of magnesium oxide with the remainder being at least one member selected from the group consisting of zinc oxide and calcium oxide;

(c) from about 13 to about 35 mole percent of B_2O_3; and

(d) from about 10 to about 25 mole percent of SiO_2 with about 50 to 90 volume percent of said partially devitrified porcelain being in a crystalline state and the remainder being in the state of a vitreous glass, wherein the principal crystalline phases are crystals of a first and second type, said first crystal being of the composition $BaO.2MgO.2SiO_2$ and said second crystal being of the composition $2MgO.B_2O_3$.

4,355,115

BOROSILICATE GLASS FRIT WITH MGO AND BAO

Kenneth W. Hang, Princeton Junction, and Wayne M. Anderson, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 91,091, Nov. 5, 1979, Pat. No. 4,256,796. This application Oct. 3, 1980, Ser. No. 193,712

Int. Cl.³ C03C *3/10*

U.S. Cl. 501—21 **2 Claims**

1. A devitrifiable glass frit which is free to substantially free of alkali metal oxide and which on firing is converted into a porcelain containing between 50 and 90 volume percent of crystalline material, said glass frit consisting essentially, on an oxide basis, of:

(a) from about 6 to about 25 mole percent of barium oxide;

(b) from about 30 to about 60 mole percent of MO wherein MO is a member selected from the group consisting of magnesium oxide and mixtures of magnesium oxide with at least one member selected from the group consisting of zinc oxide and calcium oxide in which MgO comprises from about 50 to about 75 mole percent of the mixture;

(c) from about 13 to about 35 mole percent of boron trioxide; and

(d) from about 10 to about 25 mole percent of silicon dioxide.

4,355,116

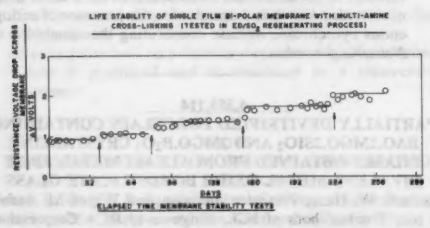
STABLE HIGH PERFORMANCE BIPOLAR MEMBRANE WITH CROSS-LINKED FUNCTIONAL GROUPS

Lester T. C. Lee, Taipei, Taiwan, and Kang-Jen Liu, Bridgewater, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 29, 1980, Ser. No. 220,568

Int. Cl.³ C08F *8/32*; C08H *5/22*

U.S. Cl. 521—27 **18 Claims**



1. In a process for manufacturing a high performance, durable single film bipolar membrane having a potential drop of 1.76 volts at 100 amp/ft² after 260 days wherein an olefinic polymeric film matrix is uniformly impregnated with a mixture of a vinylaromatic monomer and a cross-linking agent and said mixture is subsequently polymerized to obtain on the film intermittently dispersed therein at least 15 percent by weight of the vinyl-aromatic mixture based on the total weight of the membrane and said mixture is cross-linked and thereafter cationic and anionic functional groups are introduced in sequence thereon from opposite sides and wherein after chemically bonding from about 50% to about 99% of the membrane thickness with highly dissociable cationic exchange groups to the aromatic nuclei from one side only, highly dissociable anionic exchange groups are chemically bonded from the other side to the remaining aromatic nuclei in from about 1% to about 50% of the membrane thickness, the improvement which comprises using an anionic exchange reagent comprising from about 5 to about 95 weight percent of a cross-linkable multifunctional amine functionalizing agent and from about 95 to about 5 weight percent of a monofunctional tertiary amine.

4,355,117

PROCESS FOR PREPARING AGGLOMERATED FIBROUS CELLULOSE

Richard L. Antrim, and Louis S. Hurst, both of Clinton, Iowa, assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Oct. 8, 1980, Ser. No. 195,214

Int. Cl.³ C08B *5/14, 11/145*; B01J *39/22, 41/16*

U.S. Cl. 521—28 **28 Claims**

1. In a process for preparing an agglomerated fibrous ion exchange cellulose composite capable of adsorbing or binding charged macro-molecules wherein a fibrous cellulose having ion exchange properties is agglomerated with a hydrophobic polymer, the improvement comprising first agglomerating a fibrous cellulose with a hydrophobic polymer to form a granular composite at a ratio of derivatizing agent to cellulose of greater than 0.7" has been added after and then derivatizing the agglomerated fibrous cellulose in the composite to impart ion exchange properties thereto, at least portions of the derivatized cellulose being free to adsorb charged macro-molecules, and maintaining the composite in granular form.

4,355,118

PROCESS FOR THE PRODUCTION OF INORGANIC-ORGANIC COMPOSITIONS

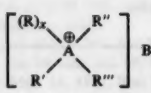
Miltiadis I. Iliopulos, Coraopolis, and Gert F. Baumann, Pittsburgh, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 223,593, Jan. 9, 1981, abandoned. This application Sep. 30, 1981, Ser. No. 307,053

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—108 **5 Claims**

1. In a process for the production of an inorganic-organic foam composition comprising reacting an organic, nonionic hydrophilic polyisocyanate with an aqueous alkali metal silicate in the presence of a catalyst and a blowing agent, the improvement wherein said aqueous alkali metal silicate contains from 0.1 to 15% by weight, based on the weight of the aqueous alkali metal silicate, of a compound of the formula:



wherein A is selected from the group consisting of N, P and S,

wherein R, R', R" and R"' may be the same or different and are selected from the group consisting of allyl, vinyl, C_1 to C_{17} alkyl or mono- or polyhydroxy substituted alkyl, C_6 to C_{10} aryl or mono- or polyhydroxy substituted aryl, C_7 to C_{22} aralkyl or mono- or polyhydroxy substituted aralkyl, and C_7 to C_{22} alkaryl or mono- or polyhydroxy substituted alkaryl,

wherein x is 0 when A is S,

wherein x is 1 when A is N or P, and

wherein B is selected from the group consisting of OH, halogen and OR"" wherein R"" represents a C_1 to C_{12} alkyl, with the proviso that when A is S, B is not OR"".

4,355,119

OLIGOMERIC FORMAL DIOLS OF POLY(TETRAMETHYLENE ETHER) GLYCOL AND POLYURETHANES PREPARED THEREFROM

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 180,878, Aug. 25, 1980, Pat. No. 4,340,719.
This application Nov. 6, 1981, Ser. No. 318,946
Int. Cl.³ C08G 18/14
U.S. Cl. 521—159 4 Claims

1. A polyurethane which is the reaction product of

(a) an oligomeric formal diol having a number average molecular weight of 2000–12,000, made by coupling up to four poly(tetramethylene ether) glycol segments, each having a number average molecular weight of 1000–3000, with formaldehyde;

(b) an organic polyisocyanate; and

(c) a chain extender.

4,355,120

POLYIMIDE FOAMS

John Gagliani, Schaumburg; Raymond Lee, and Usman A. K. Sorathia, both of Elk Grove Village, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Division of Ser. No. 252,902, Apr. 10, 1981, Pat. No. 4,332,656.
This application Dec. 7, 1981, Ser. No. 327,930
Int. Cl.³ C08G 69/26; C08J 9/02
U.S. Cl. 521—189 3 Claims

1. A polyimide foam precursor which is a resinoid obtained by combining at least one alkyl ester of 3,3',4,4'-benzophenonetetracarboxylic acid; a meta- or para-substituted aromatic diamine which is free of aliphatic moieties; and a heterocyclic diamine, said ester(s) and said diamines being present in concentrations such that the imide forming functionalities are substantially equimolar, and the molar ratio of heterocylic diamine to tetracarboxylic acid diester being in the range of about 0.4–0.42 to 1.0.

4,355,121

HEAT STRENGTH CURABLE SILICONE RUBBER COMPOSITIONS

Edwin R. Evans, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,659
Int. Cl.³ C08L 83/06
U.S. Cl. 523—213 35 Claims

1. A high strength heat curable silicone rubber composition comprising (A) 100 parts by weight of vinyl-terminated diorganopolysiloxane base polymer having a viscosity varying from 1,000,000 to 300,000,000 centipoise at 25° C. where the organo groups are selected from a mixture of fluoroalkyl groups and monovalent hydrocarbon radicals wherein the aliphatic type unsaturation on the polymer is 0.7 weight percent or less; (B) from 5 to 80 parts by weight of vinyl-terminated diorganopolysiloxane additive polymer having a viscosity varying from 1,000,000 to 300,000,000 centipoise at 25° C. where the organo groups are a mixture of fluoroalkyl radicals and monovalent hyrocarbon radicals wherein the vinyl-on chain content of the additive polymer varies from 0.05 to 10 mole percent of organo, vinyl siloxy units and (C) from 0.1 to 10 parts of a curing catalyst.

4,355,122

WATER-BORNE THERMOPLASTIC POLYHYDROXYETHER COMPOSITIONS

You-Ling Fan, East Brunswick, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 15, 1980, Ser. No. 216,639
Int. Cl.³ C08L 63/10
U.S. Cl. 523—423 16 Claims

1. Method of preparing thermoplastic polyhydroxyethers which can be dispersed in water which comprises:

(1) grafting onto normally solid thermoplastic polyhydroxyether one or more ethylenically unsaturated hydrocarbon monomers having 3 to about 8 carbons at least one of said monomers containing sufficient carboxyl, —COOH, groups to provide from about 1 carboxyl group per 10 monomeric units of thermoplastic polyhydroxyether to about 10 carboxy groups per each monomeric unit of polyhydroxyether; and

(2) blending said grafted thermoplastic polyhydroxyether in a high turbulence field with:

(a) water,

(b) a water-miscible base, and

(c) a water-miscible organic solvent in which said thermoplastic polyhydroxyether is soluble until an ionomer of the grafted thermoplastic polyhydroxyether is obtained as a colloidal dispersion,

said thermoplastic polyhydroxyether having the general formula:

$$\{D-O-E-O\}_n$$

wherein D is the radical residuum of a dihydric phenol, E is an hydroxyl containing radical residuum of an epoxide and n represents the degree of polymerization and is at least 30.

4,355,123

CURED POLYESTER COMPOSITIONS AND PROCESS FOR THEIR PRODUCTION

Charles D. Dudgeon, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,902
Int. Cl.³ C08K 5/05
U.S. Cl. 523—511 11 Claims

1. In a process for the production of a cured polyester resin composition comprising formulating a curable such composition and then curing said curable composition, the improvement wherein said composition contains an amount of aliphatic polyol having a molecular weight of at least about 2000 sufficient to reduce polyester resin shrinkage incident to curing.

4,355,124

AIR- AND/OR OVEN-DRYING LUBRICANT PAINT COMPOSITION FOR PRODUCING DRY-FILM LUBRICANTS

Gilbert Baumann, Noice Le Roy, France; Paul Deyber, Munich, Fed. Rep. of Germany; Wilhelm Huber, Landshut, Fed. Rep. of Germany; Werner Läpple, Karlsfeld, Fed. Rep. of Germany, and Horst Trautmann, Geretsried, Fed. Rep. of Germany, assignors to Dow Corning GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,456
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018873
Int. Cl.³ C08K 5/34
U.S. Cl. 524—104 17 Claims

1. An air- and/or oven-drying lubricant paint composition for preparing dry-film lubricants, said composition comprising

(a) a binder selected from the group consisting of polyarimide resins and polyaramidimide resins,

(b) a solid lubricant selected from the group consisting of polyalkylene waxes and modified polyalkylene waxes, and

(c) an organic solvent for the binder, optionally containing an extender.

4,355,125

METHOD FOR PREPARING STABLE AQUEOUS DISPERSIONS OF IONOMER RESINS

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,812, Nov. 24, 1980, Pat. No. 4,324,872. This application Oct. 22, 1981, Ser. No. 313,554

Int. Cl.³ C08L *23/26, 33/02*

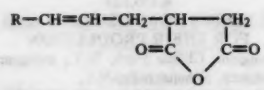
U.S. Cl. 524—401 9 Claims

1. A method for preparing a stable aqueous dispersion of an ionomer resin which consists essentially of heating and stirring a mixture of at least 10 parts by weight of an alkali-soluble, ionomer-containing polymeric composition and 100 parts by weight of an aqueous alkaline medium for a time sufficient to disperse the polymer solids throughout the aqueous medium and form a low viscosity, compositionally uniform dispersion; the quantity of alkali in the alkaline medium being sufficient to provide a pH of at least 9 in the final dispersion; said alkali-soluble, ionomer-containing polymeric composition consisting essentially of an intimate fusion blend of;

(a) 100 parts by weight of an ionomer resin, and

(b) about 5 to 900 parts by weight of an alkenyl succinic anhydride;

said ionomer resin being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about 1–10 mol % and having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50; and said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing about 13 to 49 carbon atoms.

4,355,126

FLAME RETARDANT, NON-DRIPPING COMPOSITIONS OF POLYPHENYLENE ETHER AND ACRYLONITRILE-BUTADIENE-STYRENE

William R. Haaf, Voorhesville, N.Y., and Donald L. Reinhard, Lenox, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 530,373, Dec. 6, 1974, abandoned. This application Feb. 26, 1979, Ser. No. 15,103

Int. Cl.³ C08K *3/10, 3/16*

U.S. Cl. 524—411 15 Claims

1. A flame retardant, one-dripping thermoplastic molding composition which comprises:

(a) from 10–95 parts by weight of normally flammable polyphenylene ether resin;

(b) from 5–90 parts by weight of a vinyl aromatic resin;

(c) a flame retardant additive in a minor proportion based on said thermoplastic molding composition but in an amount sufficient to render said thermoplastic composition non-burning or self-extinguishing; and

(d) A polytetrafluoroethylene resin in a minor proportion based on said thermoplastic molding composition in an amount at least sufficient to render said thermoplastic molding composition non-dripping.

4,355,127

PHYSICAL PROPERTY IMPROVEMENT IN NITRILE RESINS BY USE OF CERTAIN PROCESSING AIDS AND FILLERS

Ralph E. Isley, Northfield, Ohio, assignor to SOHIO, Cleveland, Ohio

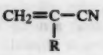
Division of Ser. No. 70,591, Aug. 29, 1979, Pat. No. 4,292,228. This application Apr. 30, 1981, Ser. No. 258,864

Int. Cl.³ C08F *8/46*

U.S. Cl. 524—423 10 Claims

1. The composition comprising a blend of a resin, from 2 to 50 parts by weight per hundred parts by weight of resin of an polycarboxylic acid anhydride processing aid, and from 11.7 to 336 parts by weight per hundred parts by weight of a resin of a filler, selected from the group consisting of calcium carbonate, magnesium carbonate, basic lead carbonate, zinc carbonate, aluminum hydroxide (hydrated), calcium hydroxide, lead hydroxide, zinc chromate, aluminum oxide, calcium oxide, chromium oxide, iron oxide, magnesium oxide, lead oxides, titanium dioxide, zinc oxide, aluminum silicate (hydrated), magnesium aluminum silicate, potassium aluminum silicate, sodium aluminum silicate, amorphous silica, calcium meta silicate, calcium silicate, diatomaceous silica, magnesium silicate, basic lead sulfate, barium sulfate, calcium sulfate, cadmium sulfide, mercuric sulfide and lead sulfide, said resin being a polymer which results from the polymerization of

(A) from 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an alpha-olefin having the structure

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(2) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

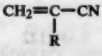
(3) vinyl acetate,

(4) styrene, and

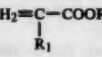
(5) indene

in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said

rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

4,355,128

DURABLE MOLDED ARTICLES

James B. Mercer, Henderson, N.C., assignor to Facet Enterprises, Inc., Henderson, N.C.

Filed May 15, 1981, Ser. No. 263,988
Int. Cl.³ C08L *61/24*
U.S. Cl. 524—423 28 Claims

1. A durable molded article of a hardened mixture comprising

a resin system comprising at least one hardenable resin,

gypsum filler which is a by-product of phosphate refining and which includes gypsum, water, and phosphate, and

glass fibers which are a by-product of bulk filter media manufacturing.

4,355,129

ORGANOPOLYSILOXANE ELASTOMER-FORMING COMPOSITIONS

Michael J. Dams, Pontyclun, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Apr. 13, 1981, Ser. No. 253,414
Claims priority, application United Kingdom, Apr. 16, 1980, 8012461
Int. Cl.³ C08L *83/04*
U.S. Cl. 524—435 6 Claims

1. A composition curable to an organopolysiloxane elastomer and which comprises (A) a polydiorganosiloxane convertible to the solid elastic state wherein the organic substituents are selected from monovalent hydrocarbon groups and monovalent fluorinated organic groups, at least 40 percent of the total number of substituents being methyl groups any groups having aliphatic unsaturation being present in a proportion of not more than 2 percent of the total number of substituents, the ratio of organic substituents to silicon atoms in the polydiorganosiloxane being in the range from 1.98 to 2.01, (B) a filler, (C) an organic peroxide curing agent, and (D) from 0.01 to 10 parts by weight per 100 parts by weight of (A) of a pigment which is an inorganic calcined complex oxide containing Co and Al.

3. A composition as claimed in claim 1 or claim 2 wherein the filler comprises from 10 to 60 parts by weight per 100 parts by weight of (A) of a reinforcing silica.

4,355,130

POLYALPHAOLEFIN EXTENDED POLYURETHANE SYSTEMS

Richard E. Heinze, Mason, Mich., assignor to Communications Technology Corporation, Los Angeles, Calif.

Continuation of Ser. No. 176,729, Aug. 11, 1980, abandoned. This application Oct. 16, 1981, Ser. No. 311,950
Int. Cl.³ C08K *5/01*
U.S. Cl. 524—491 14 Claims

1. A polyalphaolefin extended polyurethane system consisting essentially of the low viscosity liquid reaction product of an isocyanate terminated polyisocyanate with a polyol in the presence of a low viscosity liquid polyalphaolephin homopolymer of decene-1 and optionally, an ester coupling agent, the polyisocyanate-polyol reaction product being present in a range of from bout 8–99 parts by weight, said polyalphaolefin in a range of from about 1–40 parts by weight and said ester in a range of from 0–50 parts by weight.

4,355,131

ADHESION OF RUBBER TO GLASS FIBERS

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 228,844, Jan. 26, 1981, abandoned. This application Dec. 17, 1981, Ser. No. 331,549
Int. Cl.³ C08L *61/10, 51/00*
U.S. Cl. 524—504 21 Claims

13. A composition of matter comprising an aqueous alkaline dispersion of from about 30 to 50% by weight of solids comprising on a dry weight basis 100 parts by weight of a rubbery graft copolymer of a seed of (1) a polymer of an acrylate monomer, said polymer having a glass transition temperature of not above about −20° C., said polymer optionally additionally containing copolymerized with said acrylate monomer a very minor amount by weight of a crosslinking polyunsaturated monomer, and a shell of (2) a copolymer of a vinyl pyridine monomer having from 7 to 9 carbon atoms and a conjugated diene monomer having from 4 to 6 carbon atoms, wherein in said graft copolymer the total amount of said monomers forming said graft copolymer is from about 8 to 20% by weight of said acrylate monomer, from 3 to 20% by weight of said vinyl pyridine monomer and from 60 to 89% by weight of said conjugated diene monomer and about 3 to 15 parts by weight of a water soluble thermosetting phenolic-aldehyde resin.

4,355,132

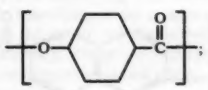
ANISOTROPIC MELT PHASE FORMING POLY(ESTER-AMIDE) DERIVED FROM P-HYDROXYBENZOIC ACID, 2,6-NAPHTHALENEDICARBOXYLIC ACID, AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE, AND, OPTIONALLY, HYDROQUINONE AND ADDITIONAL CARBOCYCLIC DICARBOXYLIC ACID

Anthony J. East, Madison; Gordon W. Calundann, North Plainfield, and Larry F. Charbonneau, Chatham, all of N.J., assignors to Celanese Corporation, New York, N.Y.

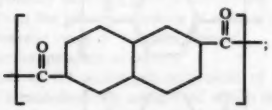
Filed Apr. 7, 1981, Ser. No. 251,819
Int. Cl.³ C08G *69/44*
U.S. Cl. 524—602 45 Claims

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, and, optionally, IV and V wherein:

I is

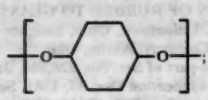


II is



III is $-\{Y-Ar-Z\}-$, where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group;

IV is



; and

V is

where A is a divalent carbocyclic radical other than naphthylene,

wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 20 to 70 mole percent, moiety II is present in a concentration within the range of approximately 5 to 35 mole percent, moiety III is present in a concentration within the range of approximately 5 to 35 mole percent, moiety IV is present in a concentration within the range of approximately 0 to 35 mole percent, and moiety V is present in a concentration within the range of approximately 0 to 30 mole percent, and with said poly(ester-amide) being wholly aromatic with the possible exception of said carbocyclic moiety V in the sense that each moiety present contributes at least one aromatic ring.

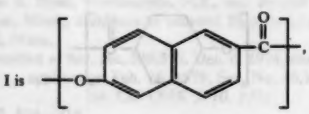
4,355,133

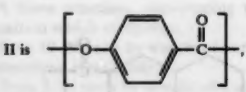
POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID, 4-HYDROXY BENZOIC ACID, 1,4-CYCLOHEXANEDICARBOXYLIC ACID, AND AROMATIC DIOL CAPABLE OF READILY UNDERGOING MELT PROCESSING TO FORM ARTICLES POSSESSING HIGH IMPACT PROPERTIES

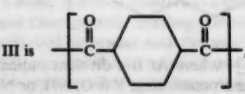
Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,345
Int. Cl.³ C08G *63/60*
U.S. Cl. 524—604 **23 Claims**

1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II, III, and IV which optionally may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:

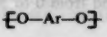
I is  ,

II is  ,

III is  ,

wherein at least approximately 90 percent of said III units are in the trans-configuration, and

IV is a dioxyaryl moiety of the formula



where Ar is a divalent radical comprising at least one aromatic ring,

with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, a phenyl group, and mixtures of the foregoing, and wherein said polyester comprises approximately 10 to 70 mole percent of moiety I, approximately 10 to 60 mole percent of moiety II, approximately 10 to 45 mole percent of moiety III, and approximately 10 to 45 mole percent of moiety IV.

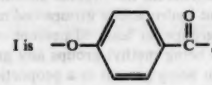
4,355,134

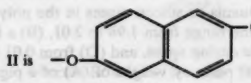
WHOLLY AROMATIC POLYESTER CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE AT AN ADVANTAGEOUSLY REDUCED TEMPERATURE

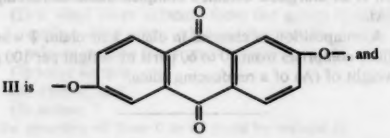
Larry F. Charbonneau, Chatham, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

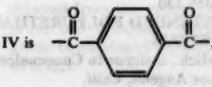
Filed Jun. 4, 1981, Ser. No. 270,440
Int. Cl.³ C08G *63/60*
U.S. Cl. 524—605 **22 Claims**

1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase consisting essentially of the recurring moieties I, II, III, and IV having the structural formulas wherein:

I is  ,

II is  ,

III is  , and

IV is  ,

wherein said wholly aromatic polyester is substantially free of aromatic rings possessing ring substitution and meta disposed linkages in the polymer chain, wherein said wholly aromatic polyester comprises approximately 20 to 80 mole percent of moiety I, approximately 5 to 20 mole percent of moiety II, approximately 5 to 20 mole percent of moiety III, and approximately 10 to 40 mole percent of moiety IV, and wherein said wholly aromatic polyester can be melt processed at a lower minimum temperature when compared to a similarly formed wholly aromatic polyester wherein moiety III is omitted and is replaced by an additional concentration of moiety II which corresponds to the concentration of moiety III.

4,355,135

TINTABLE ABRASION RESISTANT COATINGS

James R. January, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 4, 1981, Ser. No. 318,240
Int. Cl.³ C08K 3/20
U.S. Cl. 524—767 63 Claims

1. A composition comprising

(A) a base resin consisting of an aqueous-alcoholic dispersion of

(i) 5 to 75 weight percent, based on the total solids of (A), of colloidal silica,

(ii) 0 to 50 weight percent, based on the total solids of (A), of a partial condensate of a silanol which is selected from a group consisting of silanols having the formula

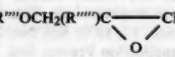
(a) $RSi(OH)_3$ wherein R is methyl,

(b) $R'Si(OH)_3$ wherein R' is a mixture of methyl with a radical selected from the group consisting of vinyl, phenyl, ethyl, propyl, 3,3,3-trifluoropropyl, gamma-methacryloxypropyl, gamma-mercaptopropyl and gamma-chloropropyl wherein the ratio of methyl radicals to the other radicals in the mixture is at least 1:1, and

(c) $R''Si(OH)_3$ wherein R'' is selected from a group consisting of vinyl, phenyl, ethyl, propyl, 3,3,3-trifluoropropyl, gamma-methacryloxypropyl, gamma-mercaptopropyl and gamma-chloropropyl and mixtures thereof, wherein when (c) is selected, the amount of (c) in (A) cannot exceed 10 weight percent based on the total weight of (A);

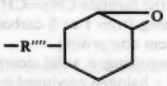
(iii) 10 to 55 weight percent, based on the total solids of (A), of a partial condensate of a silanol of the formula $R'''Si(OH)_3$ wherein R''' is selected from the group consisting of

(a)



wherein R'''' is an alkylene radical containing 1 to 4 carbon atoms, R''''' is a hydrogen atom or an alkyl radical of 1 or 2 carbon atoms and

(b)



wherein R''''has the meaning set forth above;

(B) a crosslinker for (A) and,

(C) a curing catalyst.

4,355,136

SOLVENT-RESISTANT UNSATURATED POLYESTER COMPOSITIONS

John R. Dombroski, and Fred W. Light, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,034
Int. Cl.³ C08G 63/76; C08L 67/00
U.S. Cl. 525—35 15 Claims

1. Composition comprising a polyester derived from 100 mole % of an acid component and 100 mole % of a glycol component, said acid component comprising about 30–90 mole % of at least one α,β-ethylenically unsaturated dicarboxylic acid and about 70–10 mole % of a compound containing a cinnamic acid moiety, and said glycol component comprising at least one saturated aliphatic glycol containing from 2 to 10 carbon atoms.

10. Molding composition comprising the polymer composition of claim 1 combined with from about 10 to about 90%, based on the weight of the mixture, of an ethylenically unsaturated monomeric crosslinking agent.

4,355,137

RECOVERY OF HEAVY METALS FROM SOLUTION BY EXTRACTION WITH CROSS-LINKED VEGETABLE PROTEIN

George Winter, Beaumaris, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Continuation-in-part of Ser. No. 84,614, Oct. 15, 1979, Pat. No. 4,261,819. This application Oct. 29, 1980, Ser. No. 202,006
Claims priority, application Australia, Oct. 16, 1980, 63282/80
Int. Cl.³ C08L 89/00
U.S. Cl. 525—54.1 7 Claims

1. A method of abstracting heavy metal ions from solution in which a solution containing heavy metal ions is brought into contact with a cross-linked vegetable protein.

3. A method of separating a mixture of heavy metal ions whereby a solution containing at least two heavy metal ions is brought into contact with a cross-linked vegetable protein under conditions such that one of the said heavy metal ions is selectively adsorbed onto said cross-linked vegetable protein.

4,355,138

POLYISOCYANATE ADDUCTS WITH APOLAR SOLVENT COMPATIBILITY AND GOOD STORAGE STABILITY

Peter Markusch, McMurray, Pa.; George A. Hudson, deceased, late of Venetia, Pa., and by Richard L. White, administrator, Leverkusen, Fed. Rep. of Germany, assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 10, 1981, Ser. No. 282,285
Int. Cl.³ C08G 18/78; C07C 127/24
U.S. Cl. 525—127 17 Claims

1. A light stable polyisocyanate adduct mixture with an average functionality greater than about 2.0 and an isocyanate content of between about 4 and 19 percent by weight based on solids, which has good compatibility with apolar solvents and good storage stability in a solution of polyisocyanate solvents comprising the reaction product of

(a) a polyisocyanate with an average functionality greater than about 2.0 and containing only aliphatically or cycloaliphatically bound isocyanate groups with

(b) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a saturated, straight or branched, aliphatic or cycloaliphatic monohydric alcohol which contains at least 8 carbon atoms and

(c) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a monohydroxy compound which contains one or more polarity inducing groups comprising a member selected from the group consisting of ester groups, ether groups aromatic rings or mixtures thereof,

and/or the reaction product of (a) and

(d) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a monohydroxy compound which contains

(1) a saturated, straight or branched hydrocarbon chain having at least about 8 carbon atoms, and

(2) one or more polarity inducing groups comprising a member selected from the group consisting of ester groups, ether groups, aromatic rings or mixtures thereof.

4,355,139
COMPATIBILIZED POLYMER BLENDS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 128,704, Mar. 10, 1980, Pat. No. 4,299,931. This application Jun. 22, 1981, Ser. No. 276,276
Int. Cl.³ C08F 8/00
U.S. Cl. 525—133 **4 Claims**

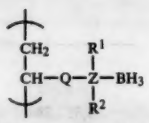
1. A compatibilized polymer composition prepared by melt mixing about 90–10 parts by weight of thermoplastic olfein polymer, and correspondingly about 10–90 parts by weight of solid nitrile rubber having an average molecular weight of 50,000 or more, and a compatibilizing amount of an olefin polymer containing at least one graft forming functional group.

4,355,140
BORANE REDUCING RESINS

Larry Manziek, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 749,560, Dec. 10, 1976, abandoned. This application Jan. 21, 1981, Ser. No. 226,656
Int. Cl.³ C08F 8/42
U.S. Cl. 525—329.4 **4 Claims**

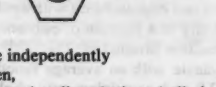
1. A nonionic borane reducing resin which comprises a solid, crosslinked copolymer containing a plurality of amine of phosphine borane adducts of the formula:



wherein
Q is a group of the formula

$$-(CH_2)_m-T-(CH_2)_n-;$$

m and n are independently integers from 0 to 3;
T is the group



R^1 and R^2 are independently
(a) hydrogen,
(b) (C_1–C_8) optionally substituted alkyl,
(c) (C_6–C_{12}) optionally substituted aryl, and
(d) (C_7–C_{12}) optionally substituted aralkyl; and
Z is nitrogen or phosphorous.

4,355,141
POLYMERIZING VINYL CHLORIDE IN REACTOR TREATED WITH CONDENSATES

Hiroshi Okada; Seiichi Masuko; Kuniyuki Gotoh, all of Nagoya, and Takehiko Mogi, Tokai, all of Japan, assignors to Mitsui Toatsu Chemical, Inc., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,498
Int. Cl.³ C08F 2/20, 2/02
U.S. Cl. 526—62 **4 Claims**

1. A process for the homopolymerization of vinyl chloride or the copolymerization thereof with a monomer copolymerizable therewith in an aqueous medium or by mass polymerization technique, characterized in that the inner walls of a polymerization tank and other parts of a polymerization apparatus system which are to be contacted with the monomer(s) are previously coated with a layer of a copolycondensate obtained by reacting a resol type phenol/aldehyde precondensate prepared in the presence of a basic catalyst with a nitrogen-containing compound selected from the group consisting of nitrophenols, nitrobenzoic acids, nitrobenzenesulfonic acids, aminophenols, aminobenzoic acids and aminobenzenesulfonic acids.

4,355,142
METHOD FOR HOMOGENIZING MONOMER MIXES FOR VINYL LATEX PRODUCTION

Sohan L. Khungar, Houston, Tex., and Suresh R. Shah, Sheffield Lake, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 27, 1981, Ser. No. 238,919
Int. Cl.³ C08F 2/22
U.S. Cl. 526—88 **17 Claims**

1. A method for homogenizing a monomer mix for making a latex, said mix containing ingredients selected from vinyl halide, vinylidene halide, mixtures thereof, mixtures thereof with one or more copolymerizable monomers, and other ingredients, said method comprises passing said mix through a first stage of a homogenizer which includes the steps of shearing the mix by means of a rotating shearing means as the mix is forced into a plurality of centrifugally rotating channels in the shearing means, conveying the mix from the rotating channels into stationary channels, repeating the shearing and the conveying steps at least once through successive rotating and stationary channels, conveying the mix from the first stage to a polymerization reactor where the latex is prepared.

4,355,143
PROCESS FOR THE POLYMERIZATION OF ETHYLENE AND THE RESULTING PRODUCTS

Dominique Lassalle, and Laszlo Havas, both of Martigues, France, assignors to Naphtachimie, Courevoie, France

Filed Sep. 17, 1979, Ser. No. 75,897
Claims priority, application France, Sep. 22, 1978, 78 27168
Int. Cl.³ C08F 4/64, 10/02
U.S. Cl. 526—119 **13 Claims**

1. A process for the production of polyolefins with a wide range of distribution in respect of molecular masses comprising polymerizing, in the presence of hydrogen, monomers selected from the group consisting of ethylene and ethylene and one or more olefins having the formula $CH_2{=}CHA$, in which A is an alkyl radical containing from 1 to 8 carbon atoms, in contact with a catalytic system comprising
(a) a catalyst comprising a solid compound of titanium, magnesium and a halogen produced by reacting at a temperature within the range of −20° to 150° C.
(1) one or more compounds of tetravalent titanium having the formula $TiX_{(4-n)}(OR)_n$ wherein X is a halogen, R is an alkyl radical which contains from 2 to 8 carbon atoms, and n is an integer or a fraction which can be any value from 0 to 4
(2) magnesium as a metal or in the form of an organomagnesium compound having the formula RMgX, in which X and R are as defined above, or having the formula MgR_2 in which R is as defined above, and
(3) an alkyl halide having the formula RX wherein R and X are as defined above,
these various compounds being used in the molar ratio such that
$0.1 \leqq$ component (1)/component (2) $\leqq 0.5$
$1 \leqq RX/RMgX \leqq 2$
or
$2 \leqq RX/MgR \leqq 4$
or
$0.5 \leqq RX/Mg \leqq 10$
(b) one or more organometallic compounds of a metal of Groups II and III of the periodic table of elements, and
(c) one or more halogenated hydrocarbons,
the process being characterized in that the halogenated hy-

drocarbon(s) is selected from the compounds having the general formula:

wherein:

Y_1=F, Cl or Br

Y_2, Y_3=F, Cl, Br or C_nH_{2n+1}, n being an integer of from 0 to 6

Y_4=C_nH_{2n+1}

wherein n being an integer of from 0 to 6 and the molar ratio of the halogenated hydrocarbon(s) to the organometallic compounds is within the range of 0.01 to 1.

4,355,144

PROCESS FOR PRODUCING A PROPYLENE-ETHYLENE COPOLYMER HAVING IMPROVED STRETCHABILITY

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo; Yukio Naito; Seiichiro Ima, and Katsuyoshi Yamashita, all of Niihama, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 181,319, Aug. 25, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,431

Claims priority, application Japan, Aug. 24, 1979, 54-108341

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—137 **3 Claims**

1. In a process for producing a propylene-ethylene copolymer comprising copolymerizing propylene and a small amount of ethylene in the presence of hydrogen and a catalyst system comprising (A) titanium trichloride obtained by reducing titanium tetrachloride with an organoaluminum compound and reacting the reduced solid with an ether represented by the formula:

$$R^1—O—R^2$$

wherein R^1 and R^2 are each a straight chain, branched chain or cyclic alkyl group having 1 to 10 carbon atoms, and a halogen compound selected from the group consisting of

(i) halogen or interhalogen compounds of the formula:

$$X^1X^2_a$$

wherein X^1 and X^2 are each a chlorine, bromine or iodine atom and a is a number from 1 to 3;

(ii) titanium halides; and

(iii) organic halogen compounds,

simultaneously or successively and (B) an organoaluminum compound, the improvement which comprises supplying ethylene together with propylene to the polymerization system such that the ethylene concentration in the vapor phase of the system based on the total amount of propylene, ethylene and hydrogen in the vapor of the system is 0.15 to 1.5 mol% to obtain a propylene-ethylene copolymer having an ethylene content of from 0.1 to 1.0 wt%.

4,355,145

FURAN RESINS OF IMPROVED FIRE RESISTANCE

Nicolas Meyer, Bully Les Mines, and Michel Cousin, Loison Sous Lens, both of France, assignors to Societe Chimique des Charbonnages SA, Paris La Defense, France

Filed Apr. 22, 1981, Ser. No. 256,367

Claims priority, application France, Apr. 24, 1980, 80 9194

Int. Cl.³ C08F *4/52*; C08J *3/24*

U.S. Cl. 526—195 **10 Claims**

1. In a process of hardening furan resins by using acidic catalysts, the improvement which comprises using as the acidic catalyst a substantially anhydrous concentrated boric anhydride solution comprising at least 5 percent by weight of boric anhydride, at least one organic solvent and at least one concentrated acid.

4,355,146

PROCESS FOR REMOVING WATER-SOLUBLE PROTEIN FROM VINYL CHLORIDE RESIN

Mamoru Nakamura, and Akikatsu Kanayama, both of Takaoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 29, 1980, Ser. No. 144,822

Claims priority, application Japan, May 2, 1979, 54/54487

Int. Cl.³ C08F *2/20, 6/24, 14/06*

U.S. Cl. 526—199 **4 Claims**

1. A process for producing a blending vinyl chloride resin which comprises subjecting a vinyl chloride monomer or a mixture of vinyl chloride and a monomer copolymerizable therewith to suspension polymerization in an aqueous medium using a water-soluble protein, selected from the group consisting of casein and gelatin, as a suspending agent, and treating the resulting polymer with a proteolytic enzyme selected from the group consisting of pepsin, trypsin, chymotrypsin, cathepsin, papain, bromelin, pancreatin, ficin and proteolytic enzymes derived from microorganisms at a temperature of 20° to 70° C., the amount of the proteolytic enzyme used being 0.0001 to 5 parts by weight per 100 parts by weight of the polymer, to decompose the protein.

4,355,147

POLYSILOXANE WITH POLYCYCLIC MODIFIER COMPOSITION AND BIOMEDICAL DEVICES

William G. Deichert, Macedon; Gary D. Friends, Ontario; John B. Melpolder, Hilton, and Joon S. Park, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,524

Int. Cl.³ C08F *220/12, 226/06*

U.S. Cl. 526—264 **17 Claims**

1. A shaped article suitable for use in biomedical applications being a polymer formed by polymerizing (a) one or more polysiloxane monomers α,ω terminally bonded through divalent hydrocarbon groups to an activated unsaturated group with (b) a polycyclic modulus modifier and (c) a tear film stabilizer to form a crosslinked three-dimensional polymeric network,

said modulus modifier being selected from the group consisting of isobornyl acrylate, isobornyl methacrylate, dicyclopentandienyl acrylate, dicyclopentadienyl methacrylate, adamantanyl acrylate, adamantanyl methacrylate, isopinocamphyl acrylate and isopinocamphyl methacrylate and is present in an amount from 90 to 30 parts per 10 to 70 parts of polysiloxane monomers and the sum of parts equals 100,

said stabilizer being selected from the group consisting of hydroxyethylmethacrylate, hydroxyethylacrylate, hydroxypropylmethacrylate, hydroxypropylacrylate and mixtures thereof and is present in an amount from 2 to 20 parts per 100 parts of modulus modifier and polysiloxane monomers,

said polymer having a flexural modulus of at least 1,500 Kg/cm^2.

4,355,148

NORBORNENE POLYMERS CONTAINING BOUND PHENOLIC ANTIOXIDANT

Robert W. Layer, Cuyahoga Falls, and Linwood P. Tenney, Hudson, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

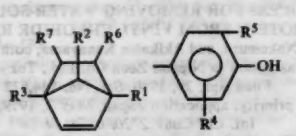
Filed Sep. 18, 1980, Ser. No. 188,397

Int. Cl.³ C08F *232/00, 234/00*

U.S. Cl. 526—281 **5 Claims**

1. A polymeric composition of matter comprising a reaction product obtained by ring opening polymerization using a me-

tathesis catalyst of a norbornene-type monomer and 0.05 to 10 parts by weight per 100 parts of said norbornene-type monomers of a norbornenyl phenolic antioxidant defined as follows:



where R^1, R^2, and R^3 are individually selected from hydrogen and alkyl groups of 1 and 3 carbon atoms; R^4 is selected from hydrogen, alkyl groups containing 1 to 12 carbon atoms, and alicyclic groups of 4 to 8 carbon atoms; R^5 is selected from alkyl groups of 1 to 6 carbon atoms, and alicyclic groups of 4 to 8 carbon atoms; R^6 is selcted from alkylene and alkenylene groups containing 1 to 8 carbon atoms; and R^7 is selected from hydrogen, alkyl and alkenyl groups of 1 to 8 carbon atoms, amount of said norbornenyl phenolic being sufficient to improve antioxidant properties of said reaction product.

4,355,149

CYCLOFLUOROSILICONE-CONTAINING COMPOSITIONS FOR THE TREATMENT OF FIBERS

Yoshinobu Koda, Chibashi; Isao Ona, Chiba, and Atsushi Takeda, Ichihara, all of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,696
Int. Cl.³ C08G 77/06
U.S. Cl. 528—18 **5 Claims**

1. A composition for the treatment of fibers, said composition being obtained by mixing components comprising

(A) a siloxane component comprising

(a) a cyclic organohydrogenpolysiloxane in which at least 5 percent of the total of organic radicals plus silicon-atom-bound hydrogen atoms are fluorinated monovalent hydrocarbon radicals and which contains at least two silicon-atom-bound hydrogen atoms per molecule, or

(b) a mixture comprising

(b)(1) the above-mentioned component (a) and

(b)(2) a substantially linear organopolysiloxane which consists of from 5 to 100 mol percent of $RQSiO_{2/2}$ units, from 0 to 95 mol percent of $R'R''SiO_{2/2}$ units and a silicon-atom-bound hydroxyl radical at each terminus, wherein R denotes an unsubstituted monovalent hydrocarbon radical having from 1 to 6 carbon atoms, Q denotes a fluorinated monovalent hydrocarbon radical and R′ and R″ denote monovalent hydrocarbon radicals, and

(B) a curing catalyst component for dehydrogenation condensation between silicon-atom-bound hydrogen atoms or between silicon-atom-bound hydrogen atoms and silicon-atom-bound hydroxyl radicals.

4. A composition according to claims 1, 2 or 3 wherein component (B) is an acid salt of tin selected from the group consisting of dibutyltin diacetate, dibutyltin dilaurate, dibutyltin dioctylate, tin dioctylate and dioctyltin dilaurate and is present in the composition in an amount of from 0.1 to 20 parts by weight for every 100 parts by weight of component (A).

4,355,150

THERMOPLASTIC POLY(BISPHENOL A TERE- OR ISOPHTHALATE) COPOLYCARBONATE

Clive P. Bosnyak, Selly Oak; Robert N. Haward, Harborne, and Ian W. Parsons, Selly Oak, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 15, 1980, Ser. No. 169,211
Claims priority, application United Kingdom, Jul. 18, 1979, 7925845
Int. Cl.³ C08G 63/64
U.S. Cl. 528—176 **4 Claims**

1. A thermoplastic composition comprising a copolymer which is a poly (bisphenol A tere-or iso-phthalate) copolycarbonate having a molar ratio of phthalate-to-carbonate units in the inclusive range of from 2 to 10.

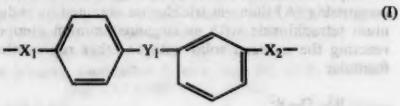
4,355,151

AROMATIC COPOLYAMIDE CONTAINING 3,4′-DIAMINO DIPHENYLENE MOIETY

Keizo Shimada; Hiroshi Mera; Noriaki Sasaki, and Akihiro Aoki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 120,992
Claims priority, application Japan, Feb. 26, 1979, 54-20685
Int. Cl.³ C08G 69/32
U.S. Cl. 528—183 **10 Claims**

1. A fiber- or film-forming aromatic copolyamide which comprises at least one recurring unit (A) of the formula (I), at least one recurring unit (B) of the formula (II) and at least one recurring unit (C) of the formula (III):



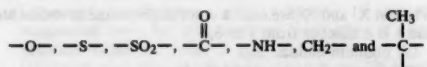
(I)

$$-X_3-Ar_1-X_4 \quad \text{(II)}$$

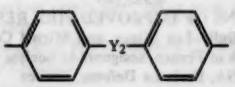
and

$$-X_5-Ar_2-X_6- \quad \text{(III)}$$

in which formulae (I), (II) and (III), Y_1 represents a divalent radical selected from the group consisting of



Ar_1 represents a member selected from the group consisting of phenylene, naphthylene and biphenylene radicals, each having two valance bonds oriented meta; Ar_2 represents a member selected from the group consisting of phenylene, naphthylene and biphenylene radicals, each having two valence bonds oriented coaxially or in parallel to each other and radicals of the formula (IV):



(IV)

wherein Y_2 represents a divalent radical selected from the same group as that set forth above for Y_1 and is the same as or different from Y_1; and X_1 and X_2 respectively represent a -Co-moiety and X_3, X_4, X_5 and X_6 respectively represent a moiety —NH— or —CO— of an amide group —NHCO— or —CONH— and the molar proportions of said recurring units (A), (B) and (C) represented by a triangular composition dia-

gram fall on or within the quadrilateral shown in FIG. 1 and defined by the co-ordinates:

P (A 50, B 5, C 45)
Q (A 5, B 5, C 90)
R (A 5, B 40, C 55) and
S (A 50, B 15, C 35).

except for the side defined by the coordinates P,Q.

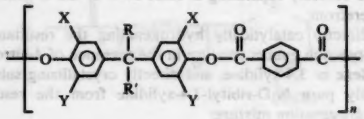
4,355,152

SOLVENT RESISTANT HALOGENATED AROMATIC POLYESTER FIBERS AND PROCESS THEREFOR

Albert G. Williams, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,363
Int. Cl.³ C08G 63/68
U.S. Cl. 528—191 24 Claims

1. Improved solvent resistant halogenated aromatic polyester fibers of the recurring structural formula:



where X which may be the same or different is chlorine or bromine, Y which may be the same or different is hydrogen, chlorine or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 10, produced by heat treating said fibers at substantially constant length at a temperature of from about 270° to about 295° C. for from about 5 to about 30 minutes.

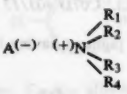
4,355,153

PROCESS FOR THE POLYMERIZATION OF FORMALDEHYDE

Pierino Radici, Turate, and Paolo Colombo, Saronno, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

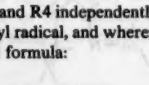
Filed Nov. 19, 1980, Ser. No. 208,457
Int. Cl.³ C08L 77/02
U.S. Cl. 528—243 7 Claims

1. A process for preparing polyformaldehyde which comprises polymerizing anhydrous monomeric formaldehyde in an organic diluent which is liquid under the polymerization conditions, which is a non-solvent for polyformaldehyde and is inert (unreactive) towards the other constituents of the polymerization medium, in the presence of a catalytic amount of a compound of the general formula:



(I)

wherein R1, R2, R3 and R4 independently are an alkyl, cycloalkyl, aryl or alkylaryl radical, and wherein $A^{(-)}$ is a lactamate group of the general formula:



in which PM is a linear polymethylene chain with from 3 to 13 carbon atoms, non substituted or having one or more hydrogen atoms replaced by an alkyl, cycloalkyl, aryl or alkylaryl radical.

4,355,154

METHOD FOR PREPARING CONDENSATION POLYMERS BY EMULSION POLYMERIZATION

John C. Sasm, and Yungnien J. Chou, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 6, 1981, Ser. No. 308,961
Int. Cl.³ C08G 63/22
U.S. Cl. 528—274 40 Claims

1. A polyester prepared by (1) combining a liquid aqueous medium with at least one emulsifiable precursor and an effective amount of at least one polycondensation catalyst and (2) reacting the resultant emulsion at a temperature at which the precursor is emulsifiable for a period of time sufficient to form said polyester;

wherein said precursor comprises at least one member selected from the group consisting of hydroxycarboxylic acids containing at least 8 carbon atoms and mixtures comprising a polyfunctional alcohol containing at least 6 carbon atoms and a polyfunctional carboxylic acid containing at lesst 5 carbon atoms or the corresponding carboxylic acid anhydride and

wherein said polycondensation catalyst comprises at least one member selected from the group consisting of mineral acids, organic sulfonic acids, esters of sulfuric acid, alkali metal salts and esters of organic sulfonic acids, alkali metal salts of sulfuric acid half esters wherein the alcohol residue contains at least 12 carbon atoms and mixtures comprising (a) an ester of sulfuric acid wherein the alcohol residue contains at least 12 carbon atoms, an alkali metal salt of a sulfuric acid half ester or a cationic surfactant and (b) an alkali metal salt of sulfuric acid.

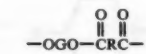
4,355,155

THERMOPLASTIC COPOLYESTER ELASTOMER

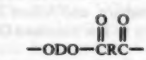
Suzanne B. Nelsen, Bergenfield, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,958
Int. Cl.³ C08G 63/54, 63/66
U.S. Cl. 528—301 8 Claims

1. A segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



and said short chain units being represented by the formula



where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalatic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4 butanediol or 1,4 butenediol; provided,

(a) said short chain segments amount to between about 30% and about 85% by weight of the copolyester, and

(b) between about 10% and about 40% of the D groups represent divalent radicals remaining after removal of hydroxyl groups from 1,4 butenediol.

4,355,156

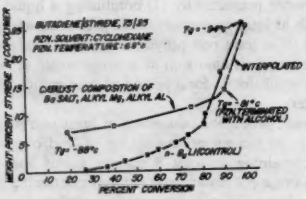
SOLUTION POLYMERIZATION

Robert E. Bingham, Cuyahoga Falls; Richard R. Durst, Stow; Hubert J. Fabris, Akron; Ivan G. Hargis, Tallmadge; Russell A. Livigni, and Sundar L. Aggarwal, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 124,373, Feb. 25, 1980, Pat. No. 4,302,568. This application Sep. 14, 1981, Ser. No. 301,691

Int. Cl.³ C08D *1/32;* C08F *1/74, 19/08*

U.S. Cl. 528—413 13 Claims



1. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about 0° to 150° C. a polymerizable heterocyclic monomer with a catalyst in a minor effective amount sufficient to polymerize said monomer to obtain a polymer, said catalyst comprising (1) an alcoholate selected from the group consisting of barium alcoholate, calcium alcoholate and strontium alcoholate and mixtures thereof, (2) an organoaluminum compound selected from the group consisting of alkyl and cycloalkyl aluminum compounds and mixtures of the same in which the organic moities have from 1 to 20 carbon atoms and (3) an organomagnesium compound selected from the group consisting of alkyl and cycloalkyl magnesium compounds and mixtures of the same in which the organic moities have from 1 to 20 carbon atoms, where the mol ratio computed as metal of barium, calcium and/or strontium to magnesium is from about 1:10 to 1:2 and where the mol ratio computed as metal of magnesium to aluminum is from about 105:1 to 1.5:1.

4,355,157

HOT WATER PRECIPITATION OF RESINS CONTAINING MALEIC ANHYDRIDE

Richard W. Yanik, Twinsburg, and Albert J. Herold, Bedford, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 22, 1980, Ser. No. 218,654

Int. Cl.³ C08F *6/12*

U.S. Cl. 528—499 7 Claims

1. A method of precipitating a copolymer comprising maleic anhydride from a solution comprising an organic solvent selected from the group consisting of methyl ethyl ketone, acetone, acetonitrile, toluene and benzene, the method comprising mixing a solution of said organic solvent and a copolymer of maleic anhydride and a monomer copolymerizable therewith with hot water, the temperature of said hot water being in the range of about 40° C. to about 100° C., and agitating the resulting mixture for a sufficient period of time and at a sufficiently high shear rate to yield precipitated particles of said copolymer that are substantially free of internal organic solvent.

4,355,158

PROCESS FOR THE PREPARATION OF RIBOFLAVIN

Rudolf Wolf, Darmstadt; Fritz Reiff, Seeheim; Rolf Wittmann, Mühltal, and Jürgen Butzke, Dieburg, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 156,943

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923266; Jun. 8, 1979, 2923267; Jun. 8, 1979, 2923268; Feb. 6, 1980, 3004304

Int. Cl.³ C08G *83/00;* C12P *7/58*

U.S. Cl. 536—1 27 Claims

1. A process for preparing riboflavin from D-glucose, comprising the steps of:

(a) oxidizing D-glucose to D-gluconic acid or an alkali metal gluconate;

(b) oxidizing the resultant D-gluconic acid or gluconate to D-arabinose with hypochlorite;

(c) epimerizing the resultant D-arabinose to obtain substantially an equilibrium epimer mixture containing D-ribose, and coarsely separating at least 80% of the D-arabinose therefrom;

(d) directly catalytically hydrogenating the resultant D-ribose-rich epimer mixture in the presence of 4-nitro-1,2-xylene or 3,4-xylidine, and directly crystallizing substantially pure N-D-ribityl-3,4-xylidine from the resultant hydrogenation mixture;

(e) coupling the resultant N-D-ribityl-3,4-xylidene with a benzenediazonium salt to form 1-D-ribitylamino-3,4-dimethyl-6-phenylazobenzene; and

(f) reacting the resultant 1-D-ribitylamino-3,4-dimethyl-6-phenylazobenzene with barbituric acid to form riboflavin.

4,355,159

NICKEL COMPLEX PIGMENTS OF AZINES

Abul Iqbal, Ettingen; Paul Lienhard, Frenkendorf, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

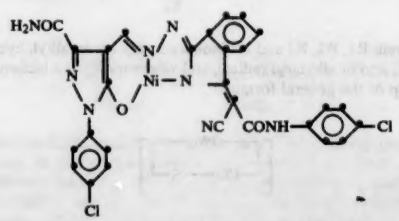
Filed May 13, 1980, Ser. No. 149,406

Claims priority, application Switzerland, May 23, 1979, 4842/79

Int. Cl.³ C07D *403/12*

U.S. Cl. 542—417 2 Claims

1. The nickel complex pigment having the formula



or a tautomer thereof.

4,355,160
THIAZOLYLACETAMIDO CEPHALOSPORIN TYPE COMPOUNDS

Michihiko Ochiai, Osaka; Taiiti Okada, Kyoto; Osami Aki, Hyogo; Akira Morimoto; Kenji Kawakita, both of Osaka, and Yoshihiro Matsushita, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Doshomachi, Japan

Division of Ser. No. 71,032, Aug. 28, 1979, Pat. No. 4,298,606, which is a division of Ser. No. 900,233, Apr. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 642,356, Dec. 19, 1975, Pat. No. 4,098,888. This application Mar. 4, 1981, Ser. No. 240,466

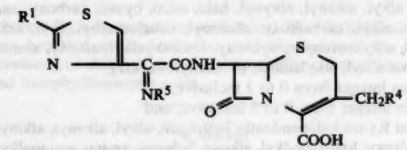
Claims priority, application Japan, Dec. 19, 1974, 49/146567

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.³ C07D *501/36;* A61K *31/545*

U.S. Cl. 544—027 4 Claims

1. A compound having antibiotic activity of the formula:



wherein

R^1 represents amino, protected amino, hydroxy or protected hydroxy;

R^4 represents heterocyclic thio wherein heterocyclic is a 5 to 6 membered hetero ring containing 1 to 4 hetero atoms from the group of oxygen, sulfur and nitrogen; and

R^5 is hydroxy or protected hydroxy;

or a pharmaceutically acceptable salt thereof.

4,355,161
MOLYBDENUM TRIOXIDE LAYERED COMPOUNDS

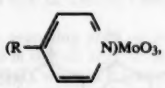
Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1980, Ser. No. 205,142

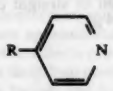
Int. Cl.³ C07F *11/00*

U.S. Cl. 544—181 3 Claims

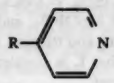
1. A composition of matter comprising layered compounds containing MoO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



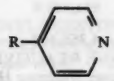
where R is halogen, C_1–C_{20} aliphatic hydrocarbon, C_6–C_{10} aryl which may be substituted by halogen or C_1–C_6 alkyl, C_7–C_{20} aralkyl, OR′ or SR′ wherein R′ is C_1–C_6 alkyl, the layered compounds being characterized in that



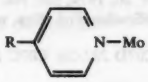
is covalently bound to a molybdenum atom in the molybdenum oxide layer and



has the steric requirement such that the maximum cross-sectional area of



perpendicular to an axis running through the



covalent bond is less than about 30 $(A)^2$.

2. A composition of matter comprising layered compounds containing MoO_3 and nitrogen donor Lewis bases, said layered compounds having the formula $LMoO_3$ where L is pyridine, pyridazine, pyrimidine, pyrazine and triazine, the layered compounds being characterized in that L is covalently bound to a molybdenum atom in the molybdenum oxide layer and L has the steric requirement such that the maximum cross-sectional area of L perpendicular to an axis running through the L-Mo covalent bond is less than about 30 $(A)^2$.

4,355,162
LAYERED COMPOUNDS OF MIXED OXIDES AND LEWIS BASES

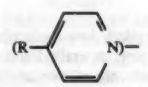
Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1980, Ser. No. 205,141

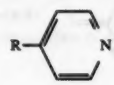
Int. Cl.³ C07F *11/00, 13/00*

U.S. Cl. 544—181 9 Claims

1. A composition of matter comprising the reaction product of a mixed oxide having layers of corner linked octahedra and tetrahedra and a nitrogen donor Lewis base, said reaction product forming a layered compound of the formula



where $MOM'O_4$ is a mixed oxide selected from the group consisting of $VOPO_4$, $VOSO_4$, $VOAsO_4$, $VOMoO_4$, $NbOPO_4$, $NbOAsO_4$, $TaOPO_4$ and $MoOPO_4$, and R is hydrogen; halogen; C_1–C_{20} aliphatic hydrocarbon, C_6–C_{10} aryl; C_7–C_{20} aralkyl; OR′ or SR′ where R′ is C_1–C_6 alkyl, the layered compound being characterized in that



is covalently bound to a metal atom in the $MOM'O_4$ layer.

2. A composition of matter comprising the reaction product of a mixed oxide having layers of corner linked octahedra and tetrahedra and a nitrogen donor Lewis base, said reaction product forming a layered compound of the formula LMOM-

'O_4 where MOM'O_4 is a mixed oxide selected from the group consisting of $VOPO_4$, $VOSO_4$, $VOAsO_4$, $VOMoO_4$, $NbOPO_4$, $NbOAsO_4$, $TaOPO_4$ and $MoOPO_4$, and L is pyridine, pyridazine, pyrimidine, pyrazine and triazine, the layered compound being characterized in that L is covalently bound to a metal atom in the MOM'O_4 layer.

4,355,163

ANTHRAQUINONE REACTIVE DYESTUFFS

Klaus von Oertzen, Cologne; Wolfgang Harms, and Klaus Wunderlich, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

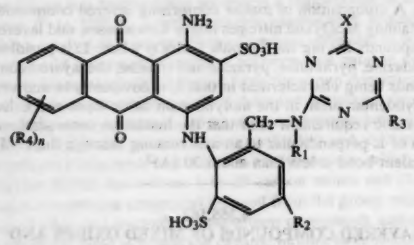
Filed Nov. 20, 1979, Ser. No. 96,084

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852672

Int. Cl.³ C07D *231/38*; C07C *143/665*

U.S. Cl. 544—189 **5 Claims**

1. Reactive dyestuffs of the formula



wherein

X=halogen

R_1=H or alkyl

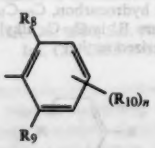
R_2=alkyl

R_3=stands for halogen, OR_7, SR_7 or

wherein

R_7=low-molecular alkyl, low-molecular alkyl substituted by C_1-C_4-alkoxy, aryl or aralkyl and wherein

R_5 and R_6=independently of one another, H, alkyl, alkyl substituted by SO_3H, OSO_3H; or aralkyl, or together with N, a heterocyclic 5-membered or 6-membered ring, or as further R_5 and R_6



wherein

R_8 and R_9=H or SO_3H

R_{10}=SO_3H, halogen, COOH, CH_3, $SO_2CH_2CH_2OSO_3H$ or SO_2NH-CH_2-CH_2-OSO_3H,

n=0 to 2

R_4=SO_3H.

4,355,164

PYRIDOTHIENOPYRIDAZINE ANTI-ALLERGY COMPOUNDS

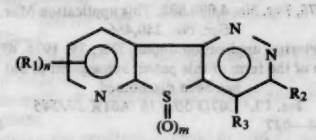
Raymond D. Youssefyeh, Tarrytown, N.Y., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed May 18, 1981, Ser. No. 264,756

Int. Cl.³ C07D *495/14, 495/04*

U.S. Cl. 544—234 **8 Claims**

1. A compound of the formula



wherein

R_1 is alkyl, alkenyl, alkynyl, halo, nitro, cyano, carboxy, carboxyalkyl, carbalkoxy, alkanoyl, trihalomethyl, aryl, aralkyl, alkylmercapto, hydroxy, hydroxyalkyl, alkoxy, amino, aminoalkyl, alkylamino, or methylenedioxy,

m is an integer from 0 to 2 inclusive,

n is an integer from 0 to 3 inclusive, and

R_2 and R_3 are independently hydrogen, alkyl, alkenyl, alkinyl, hydroxy, hydroxyalkyl, alkoxy, halogen, amino, aminoalkyl, alkylamino, alkanoylamino, alkylmercapto, carboxy, carbalkoxy, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, or arylsulfonyl, wherein in R_1, R_2 and R_3 the alkyl groups contain from 1 to 6 the alkyl groups contain from 1 to 6 carbon atoms, the alkenyl and alkynyl groups contain from 2 to 6 carbon atoms, and the aryl groups contain from 6 to 10 carbon atoms.

4,355,165

AMINO-FUNCTIONALIZED PHTHALHYDRAZIDE INTERMEDIATES

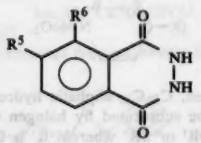
Robert C. Boguslaski; Robert J. Carrico, both of Elkhart, Ind., and James E. Christner, Birmingham, Ala., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,622, Jul. 24, 1978, which is a continuation-in-part of Ser. No. 894,836, Apr. 10, 1978, which is a continuation of Ser. No. 667,996, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Mar. 20, 1980, Ser. No. 131,881

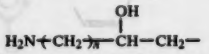
Int. Cl.³ C07D *237/32*

U.S. Cl. 544—237 **5 Claims**

1. A compound of the formula:



wherein one of R^5 and R^6 is hydrogen and the other is $-NR^7R^8$; R^7 is hydrogen or straight chain alkyl containing 1–4 carbon atoms and R^8 is



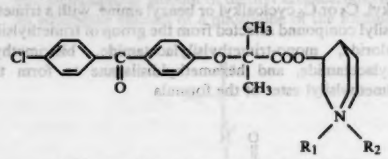
wherein n=1–3.

4,355,166
QUINUCLIDINIC ESTER AND DERIVATIVES OF PHENOXYCARBOXYLIC ACIDS

Alberto Reiner, Como, Italy, assignor to D and D S.r.l., Milan, Italy

Filed Mar. 19, 1981, Ser. No. 245,273
Claims priority, application Italy, Mar. 19, 1980, 20764 A/80
Int. Cl.³ C07D *473/08, 453/02*
U.S. Cl. 544—268 **10 Claims**

1. Compound of the formula



(I)

wherein R_1 is hydrogen or methyl and R_2 is hydrogen, chlorine, bromine or a radical of an acid selected from the group consisting of oleic, pivalic, nicotinic, clofibric, 3-pyridineacetic and theophyllineacetic acids.

4,355,167
TELOMERIC QUATERNARY SALT COMPOSITIONS

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1981, Ser. No. 259,639
Int. Cl.³ C07C *97/10*; C07D *213/53*
U.S. Cl. 546—255 **8 Claims**

1. A telomeric quaternary salt composition of the formula

$$[A_xB_y]_Z$$

wherein A is styrene, and B is selected from a quaternized salt prepared from 2-vinylpyridine, 3-vinylpyridine, 4-vinylpyridine, and dimethylaminoethylmethacrylate, x and y are numbers representing mole fractions of A and B, the sum of x and y being equal to 1, and Z represents the degree of polymerization, wherein there results a polymeric quaternary salt having a number average molecular weight of from about 1,000 to about 10,000.

4,355,168
PROCESS FOR PREPARING ARYL- OR HETEROARYLHEXADIENOIC ACIDS

Gian P. Chiusoli, Parma; William Giroldini, Bibbiano; Luciano Pallini, Fornovo Taro, and Giuseppe Salerno, Parma, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 2, 1980, Ser. No. 212,238
Claims priority, application Italy, Dec. 3, 1979, 27789 A/79
Int. Cl.³ C07D *213/55, 333/24*; C07C *57/42, 51/347*
U.S. Cl. 546—341 **14 Claims**

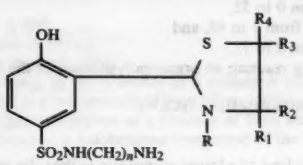
1. A process for preparing aryl- or heteroarylhexadienoic acids, characterized in that an aryl- or heteroarylacetylene of formula: R—C≡CH (I), wherein R is an aryl group containing 1 or 2 rings or a heteroaryl group containing 1 or 2 rings and 1 to 2 heteroatoms selected from O, N, and S, in the radical, optionally substituted by substituents inert under the reaction conditions, and selected from halogen and alkyl, alkoxyl and carboalkoxy groups containing from 1 to 4 carbon atoms said aryl or heteroaryl acetylene containing a total of up to 20 carbon atoms, is reacted with 3-butenoic acid CH_2=CH—CH_2—COOH (II), in an alcoholic medium and in an inert atmosphere, at a temperature approximately maintained between 50° C. and 120° C., at atmospheric pressure, in the presence of a catalyst selected from the group consisting of the phosphinic complexes of rhodium having the formulas: $Rh(PR'_3)_nL_mX$ (III) associated with alkaline salts of carboxylic acids having up to 4 carbon atoms, and $Rh(PR'_3)_nL_p{}^+Y^-$ (IV) wherein R' is a hydrocarbyl group having up to 12 carbon atoms; L is a linear or cyclic olefin selected from the olefins having a number of carbon atoms of from 2 to 10 and the chelating olefins having 6 to 8 carbon atoms, n is an integer from 1 to 3, m is an integer from 0 to 2 and such that n+m=2 or 3, and p is an integer from 0 to 3 and such that n+p=3 or 4; X is an anion selected from the haloid anions and the anions of carboxylic acids having up to 4 carbon atoms, and Y is a sparingly coordinating anion.

4,355,169
THIAZOLIDINYL-SUBSTITUTED PHENYL SULFONAMIDES

Donald A. McGowan, and Frank A. Meneghini, both of Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,357
Int. Cl.³ C07D *277/04*
U.S. Cl. 548—146 **5 Claims**

1. A compound of the formula



wherein R is selected from alkyl, aryl and aralkyl; R_1, R_2, R_3 and R_4 each are selected from hydrogen, alkyl and phenyl; and n is 2 to 10.

4,355,170
1-SUBSTITUTED IMIDAZOLE DERIVATIVES

Masaki Hayashi; Tadao Tanouchi, both of Takatsuki; Masanori Kawamura, Ibaraki, and Yoichi Iguchi, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka and Kissei Pharmaceutical Co., Ltd., Nagano, both of, Japan

Filed May 2, 1979, Ser. No. 35,180
Claims priority, application Japan, Jun. 9, 1978, 53-68892
Int. Cl.³ C07D *233/60*
U.S. Cl. 548—341 **6 Claims**

1. 1-[(7RS)-7-Ethoxycarbonyloctyl]imidazole or a non-toxic acid addition salt thereof.

4,355,171
PREPARATION OF POLYSILOXANE/POLYOXYALKYLENE COPOLYMER USEFUL AS STABILIZERS IN MAKING POLYURETHANE FOAMS

Armand de Montigny, Leverkusen; Hans-Walter Illger, Roesrath; Alberto C. Gonzalez-Doerner, Leverkusen, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,571
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929588
Int. Cl.³ C07F *7/08, 7/18*
U.S. Cl. 556—446 **2 Claims**

1. A process for the preparation of a polyorganopolysiloxane of the formula

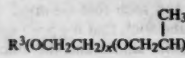
$$[R^1Si(OSiR_2)_n]_mZ_{m-1}(OR^2)_{m+2}$$

in which

R is an optionally halogen-substituted alkyl group with up to 4 C atoms,

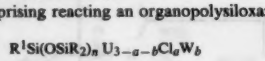
R^1 is the substituent R or a phenyl radical,

R^2 is an aliphatic, optionally unsaturated radical with up to 18 C atoms or a group of the formula



Z is the difunctional unit —O— or

R^3 is a hydrocarbon radical with up to 4 C atoms,
R^4 each independently is a hydrogen atom or R^3,
n is from 3 to 30,
m is from 1 to 15,
x is from 0 to 68,
y is from 0 to 52,
x+y is from 1 to 68, and
p is from 2 to 12,
comprising reacting an organopolysiloxane of the formula



in which
U is a radical of a lower monobasic carboxylic acid with up to 4 C atoms,
W is a radical of a fluorinated alkanesulphonic acid,
$a \leqq 1$, and
$b \leqq 0.5$,
with a mixture of R^2OH and H-Z-H, in the presence of a base in an organic solvent, the relative proportions of the reactants being determined by the value of m.

4,355,172

PROCESS FOR 4-(D-3-AMINO-3-CARBOXYPROPOXY)-PHENYLGLYOXYLIC ACID OXIME DERIVATIVES

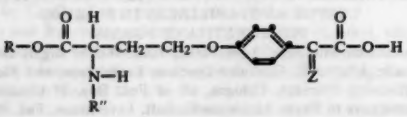
Gary A. Koppel, and Robin D. G. Cooper, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 739,160, Nov. 5, 1976, abandoned. This application Aug. 17, 1977, Ser. No. 825,344

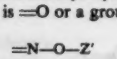
Int. Cl.[3] **C07C** *125/065, 125/067*

U.S. Cl. 560—29 **10 Claims**

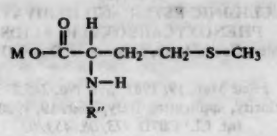
1. A process for preparing a compound of the formula



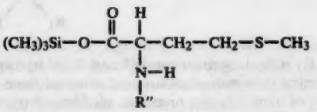
wherein
R is benzyl, 4-methoxybenzyl, 2,4,6-trimethylbenzyl, or diphenylmethyl;
R″ is t-butyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, cyclopentyloxycarbonyl, benzyloxycarbonyl, or 4-nitrobenzyloxycarbonyl; and
Z is =O or a group of the formula



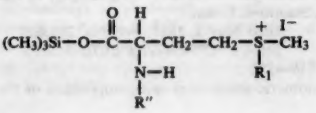
wherein Z′ is hydrogen, acetyl, chloroacetyl, triphenylmethyl or p-methoxybenzyl; which comprises the steps of
(a) silylating an amino-protected D-methionine of the formula



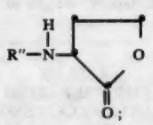
wherein M is hydrogen, an alkali metal cation or an ammonium cation derived from a primary or secondary C_1–C_4 alkyl, C_5 or C_6 cycloalkyl or benzyl amine, with a trimethylsilyl compound selected from the group of trimethylsilyl chloride, mono-trimethylsilylacetamide, bistrimethylsilylacetamide, and hexamethyldisilazane to form the trimethylsilyl ester of the formula



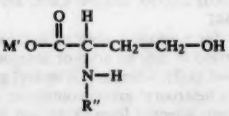
(b) alkylating said silyl ester with a C_1–C_4 alkyl iodide or benzyl iodide to form an alkylsulfonium iodide ester of the formula



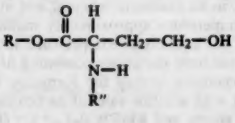
wherein R_1 is C_1–C_4 alkyl or benzyl;
(c) heating said alkylsulfonium or benzylsulfonium iodide ester in an inert aprotic solvent at a temperature between about 25° C. and about 80° C. with a C_1–C_4 alkali metal alkoxide to form an amino-protected homoserine lactone of the formula



(d) hydrolyzing said lactone with an alkali metal hydroxide to form an amino-protected D-homoserine salt of the formula

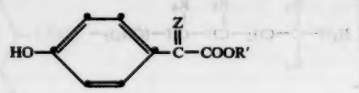


wherein M′ is an alkali metal cation;
(e) esterifying said amino-protected homoserine to form an ester of the formula



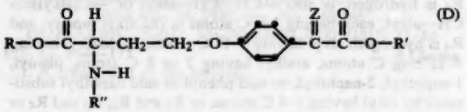
wherein R and R″ have the same meanings as defined above;

(f) reacting said ester in an inert aprotic solvent with a 4-hydroxyphenylglyoxylic acid ester of the formula



wherein R′ is 4-nitrobenzyl, 2,2,2-trichloroethyl or phenacyl, an equimolar amount of diethyl azodicarboxylate and an equimolar amount of a phosphine of the formula

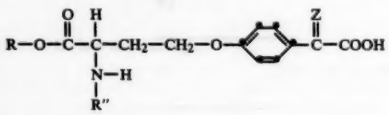
wherein R_2, R_3, and R_4 independently are C_1–C_4 alkyl, phenyl, or phenyl substituted with methyl or halogen, to form an amino-protected diester ether of the formula



(D)

wherein R, R′, R″ and Z have the same meanings as defined above; and

(g) selectively de-esterifying said ether to form an α-keto or α-oximino acid of the formula



(D)

4,355,173

PROCESS FOR THE PREPARATION OF ALKYL CARBOXYLATE

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,686
Claims priority, application Japan, Jun. 9, 1980, 55-77386
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—103 **25 Claims**

1. A process for the preparation of an alkyl carboxylate of general formula $R^1COOCH_2R^2$ comprising reacting (i) an alkyl carboxylate starting material of the general formula R^1COOR^2, (ii) carbon monoxide and (iii) hydrogen, wherein R^1 is a hydrogen atom, a normal or branched chain alkyl group having 1 to 10 carbon atoms or an aromatic group having 6 to 14 carbon atoms and R^2 is a normal or branched chain alkyl group having 1 to 5 carbon atoms,

in the presence of a catalyst comprising (a) manganese or a manganese compound and (b) ruthenium or a ruthenium compound, and a promoter comprising at least one element or compound selected from the group consisting of iodine, bromine and compounds of iodine and bromine, at a temperature of from 140° to 300° C. under a pressure of from 50 to 600 Kg/cm², said carbon monoxide and hydrogen being in a molar ratio of CO/H_2 of from 1/10 to 10/1.

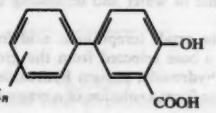
4,355,174

PREPARATION OF 5(HALOPHENYL)SALICYLIC ACID COMPOUNDS

Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 208,352, Nov. 19, 1980, which is a continuation of Ser. No. 90,792, Nov. 2, 1979, Pat. No. 4,237,315. This application Sep. 21, 1981, Ser. No. 304,449
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ C07C *65/105*
U.S. Cl. 562—469 **11 Claims**

1. A method of preparing compounds of the formula:



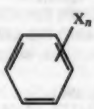
where

n is 1 or 2; and

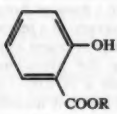
X is chloro or fluoro

comprising the steps of:

(a) combining, in the presence of a palladium catalyst system, and at a temperature of from 80° to 150° C. and under an oxygen atmosphere at a pressure of from atmospheric to 750 p.s.i.g., a halobenzene compound of the formula:



where X is chloro or fluoro and n is 1 or 2, with a salicylic acid ester of the formula:



where R is lower alkyl; wherein said palladium catalyst system comprises:

A. a catalyst portion comprising:

(1) palladium together with

(2) $C_{1-6}COO^-$ ligands and a second ligand selected from the group consisting of halo, OH^-, H_2O, NO_3^-, ClO_4 and $SO_4^=$, such that the molar weight percent, based on total ligand molar weight, of the $C_{1-6}COO^-$ ligands is from 30 to 60%; wherein the $C_{1-6}COO^-$ ligands are provided as palladium, alkali metal or alkali earth metal carboxylates and the second ligands are provided as the appropriate salts of palladium, lithium, sodium, copper, mercury or tetra (alkyl) ammonium;

wherein the ratio of the total molar weight amount of the ligands to the molar weight amount of palladium utilized, is from 2:1 to 20:1; and

(3) optionally a reaction promoting acid;

and

B. a catalyst regeneration portion comprising:

(1) on a molar basis, from 0.1 to 8.0 parts per part of the palladium catalyst of a heteropolyacid of formula $H_{3+m}(PM_{12-m}V_mO_{40})$ wherein M is Mo or W; and m is 1 to 4; and

(2) a solubilizing agent; and

(b) hydrolyzing the product of Step (a) to give the compound of Formula I.

4,355,175

METHOD FOR RECOVERY OF TEREPHTHALIC ACID FROM POLYESTER SCRAP

Stephen F. Pusztaszeri, 14 Clark Pl., Port Chester, N.Y. 10573

Filed Apr. 6, 1981, Ser. No. 251,499
Int. Cl.³ C07C 51/00, 51/42, 27/26
U.S. Cl. 562—483 11 Claims

1. A method for the recovery of purified terephthalic acid from terephthalate polyester scrap substantially free of metals, said method comprising the steps of:

(a) dissolving the polyester in a mixture of sulfuric acid and water in a volume ratio of 8.5–13 to 2 for a period of up to 30 minutes to form a precipitate of crude terephthalic acid;

(b) diluting the reaction mixture from step (a) with at least an equal volume of water and separating the crude terephthalic acid;

(c) treating the crude terephthalic acid from step (b) with water and a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide to form a solution of a water-soluble salt of the acid;

(d) filtering the solution from step (c) to remove solid impurities;

(e) acidifying the filtrate from step (d) with acid to form a precipitate of purified terephthalic acid;

(f) separating the purified terephthalic acid from step (e); and

(g) washing the terephthalic acid from step (f) until it is acid- and salt-free.

4,355,176

OXYDEHYDROGENATION PROCESS FOR PREPARING METHACRYLIC ACID AND ITS LOWER ALKYL ESTERS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 9, 1981, Ser. No. 319,353
Int. Cl.³ C07C 51/377, 57/05, 67/317, 69/54
U.S. Cl. 562—599 4 Claims

1. In a process for the catalytic conversion of isobutyric acid or a lower alkyl ester thereof to the corresponding α,β-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at a temperature between about 300° and 500° C.: the improvement comprising using as catalyst a material having the gram-atom empirical formula $Fe_aAg_bNb_cP_dO_x$ wherein a is 0.05–1.0, b is 0.005–1.0, c is 0.001–1.0, d is 0.05–3.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,355,177

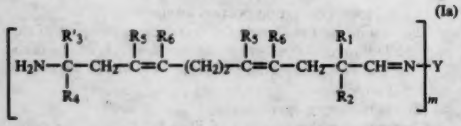
SUBSTITUTED 11-AMINO-UNDECA-4,8-DIENAL AND 11-AMINO-UNDECANAL DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 83,140, Oct. 9, 1979, Pat. No. 4,277,621. This application Jan. 30, 1981, Ser. No. 230,081
Claims priority, application Switzerland, Oct. 18, 1978, 10769/78
Int. Cl.³ C07C 109/16, 119/08, 119/10, 133/02
U.S. Cl. 564—36 9 Claims

1. A compound of formula Ia

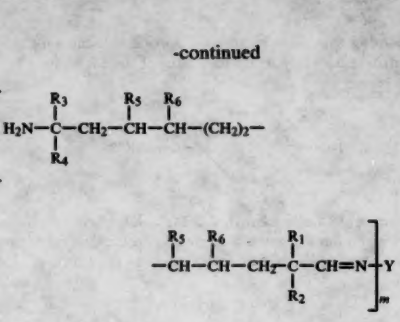
(Ia)



or Ib

-continued

(Ib)



in which m is the number 1, Y is $-NHC_6H_5$, $-CH_2C_6H_5$ or $-NHCONH_2$, where C_6H_5 is phenyl, R_1 is alkyl having 1–12 C atoms, R_2 is hydrogen or alkyl having 1–12 C atoms, R_3 is alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, phenyl, 1-naphthyl, 2-naphthyl, or said phenyl or said naphthyl substituted by alkyl having 1–4 C atoms, R_3' has the meaning defined for R_3 or, if R_4 is hydrogen, is also —CH=CH—alkyl or —C(alkyl)=CH—alkyl, each having 1–4 C atoms in the alkyl moiety, and R_4 is hydrogen, alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, phenyl, 1-naphthyl, 2-naphthyl, or said phenyl or said naphthyl substituted by alkyl having 1–4 C atoms, or R_1 and R_2, R_3 and R_4 or R_3' and R_4; or both R_1 and R_2; and R_3 and R_4; or both R_1 and R_2; and R_3' and R_4, together are alkylene having 3–11 C atoms, and R_5 and R_6 independently of one another are hydrogen or methyl.

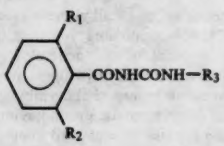
4,355,178

PROCESS FOR THE PREPARATION OF SUBSTITUTED ACYL UREAS

László Tóke; István Bitter; Éva Kárpáti née Ádám, and Tódor Pfliegel, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Oct. 17, 1980, Ser. No. 198,050
Cláims priority, application Hungary, Oct. 19, 1979, CI-1977
Int. Cl.³ C07C 127/22
U.S. Cl. 564—44 3 Claims

1. A process for the preparation of a compound of the formula:



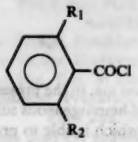
wherein

R_1 and R_2 are the same or different and each is halogen; and

R_3 is a substituted aryl group, which comprises the steps of acylating a compound of the formula (II):

$R_3NHCONH_2$

with a compound of the formula (III):



in an inert organic solvent at a temperature of from 20° C. to 100° C. and isolating the product.

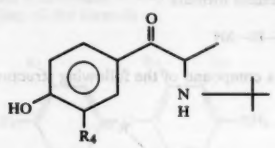
4,355,179

RADIOACTIVE NUCLIDE LABELED PROPIOPHENONE COMPOUNDS

John W. A. Findlay, Chapel Hill; Robert F. Butz, Durham, and Richard M. Welch, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 14, 1980, Ser. No. 140,165
Int. Cl.³ C07C *25/024, 103/30;* C07G *7/00;* G01N *33/54*
U.S. Cl. 564—177 4 Claims

1. A compound of the formula



wherein R_4 is a radioisotope.

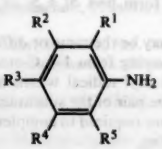
4,355,180

PREPARATION OF PRIMARY AROMATIC AMINES FROM CYCLIC ALCOHOLS AND/OR KETONES

Norbert Goetz, Worms; Leopold Hupfer, Friedelsheim; Werner Hoffmann, Neuhofen, and Manfred Baumann, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

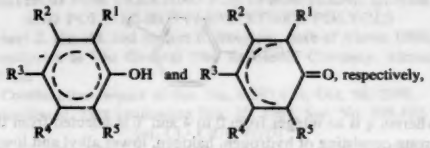
Filed Sep. 25, 1981, Ser. No. 305,908
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039085
Int. Cl.³ C07C *85/08, 85/02, 85/18*
U.S. Cl. 564—398 8 Claims

1. A process for the production of an aromatic amine having the general formula



(I)

wherein at least one of R^1, R^2, R^3, R^4 and R^5 is different from hydrogen and may be a C_1 to C_{20} alkyl, cycloalkyl or alkoxy group, a substituted or unsubstituted aryl or alkylaryl group, by reacting a saturated or olefinically unsaturated cyclic alcohol or ketone of the general formula



R^1 to R^5 having the aforementioned meanings, with ammonia in the presence of a (de)hydrogenating catalyst and preferably hydrogen, wherein the (de)hydrogenating catalyst is palladium and zinc and/or cadmium.

4,355,181

PROCESS FOR ETHANOLAMINES

Stephen B. Willis, Jr., and Joseph D. Henry, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1981, Ser. No. 238,894
Int. Cl.³ C07C *89/02, 85/04*
U.S. Cl. 564—477 4 Claims

1. In a process for making alkanolamines by the reaction of an alkylene oxide and ammonia in the liquid phase, said ammonia being employed in stoichiometric excess and in which said excess is recovered from the reaction product and recycled to said reaction, the improvement which comprises (1) reacting said ammonia and said alkylene oxide in the presence of from about 0.05 mol to about 1.0 mol of water per mol of ammonia, (2) removing the reaction product from the reactor and flashing a portion of the ammonia in a distillation column under a pressure of from about 220 to about 350 psig, (3) condensing said portion of ammonia, (4) sending the remaining reaction product and remaining ammonia to a low pressure distillation column to remove said remaining ammonia overhead, (5) sending the bottoms of step 4 comprising water and alkanolamines to a reduced pressure distillation to remove said water, (6) sending said water to an ammonia absorber unit, (7) sending said ammonia removed overhead in step 4 to said absorber unit, (8) recycling said condensed ammonia from step 3, said absorbed ammonia from step 6 and said water removed in step 5 to said reaction.

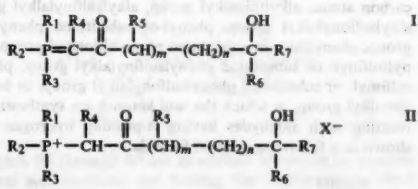
4,355,182

HYDROXY-SUBSTITUTED PHOSPHORANES AND SALTS

Richard A. Mueller, Glencoe, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

Filed Jul. 28, 1980, Ser. No. 172,781
Int. Cl.³ C07F *9/50, 9/54*
U.S. Cl. 568—11 26 Claims

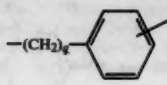
1. A compound represented by the formulae:



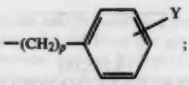
I

II

wherein R_1, R_2 and R_3 are the same or different members of the group consisting of lower alkyl, C_5–C_6 cycloalkyl, and



wherein q is an integer from 0 to 4 and Y is selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R_4 can be hydrogen or C_1–C_3 straight or branched chain alkyl; the sum of n+m=2–6; R_5 is hydrogen or lower alkyl; R_6 and R_7 are the same or different members of the group consisting of hydrogen, lower alkyl, and



p is an integer of 0 or 1; and X is an anion.

4,355,183

DECOLORIZATION TREATMENT

Martin E. Nash, and Edward E. Huxley, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 8, 1979, Ser. No. 64,967
Int. Cl.³ C07C *149/18*
U.S. Cl. 568—19 **7 Claims**

1. A process for decolorizing discolored sulfur-containing organic compounds having divalent sulfur and consisting essentially of sulfur, carbon, hydrogen, and, optionally, oxygen wherein the hydrocarbon portion of these compounds can be aliphatic, cycoaliphatic, or aromatic containing from 2 to about 30 carbon atoms per molecule which comprises contacting said discolored sulfur-containing compound with a small effective decolorizing amount of oxalic acid under conditions and for a period of time sufficient to decolorize said compounds.

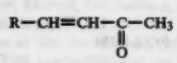
4,355,184

SYNTHESIS OF α, β-UNSATURATED-KETONES

Tsutomu Kaku; Kiyoshi Katsuura, and Mikio Sawaki, all of Takaoka, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,639
Claims priority, application Japan, May 2, 1980, 55/57953
Int. Cl.³ C07C *49/20*
U.S. Cl. 568—31 **3 Claims**

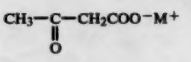
1. A method of synthesis of α, β-unsaturated-ketones having a following general formula:



wherein, R is straight or branched alkyl group having 1 to 9 carbon atoms, alkylthioalkyl group, alkylsulfinylalkyl group, alkylsulfonylalkyl group, phenyl-or substituted phenylalkyl group, phenylthio- or substituted phenylthioalkyl group, phenylsulfinyl- or substituted phenylsulfinylalkyl group, phenylsulfonyl- or substituted phenylsulfonylalkyl group, or benzylthioalkyl group, in which the said ketones are synthesized by reacting with aldehydes having α-positing hydrogen atom shown as a following general formula:

R.CHO

wherein, R is the same as the above definition, and alkali metal salts of acetoacetic acid having a following general formula:



wherein, M^+ is sodium ion or potassium ion, in the presence of an aliphatic secondary amine, in mixed heterogeneous solvents with a water and an organic solvent which is able to produce a water layer and an oil layer by decantation, under conditions of atomospheric pressure and the temperature at 10° to 50° C., preferably, 20° to 40° C.

4,355,185

PROCESS FOR THE PREPARATION OF 2-MERCAPTOALKYL-SULPHIDES AND 2-MERCAPTOALKYLETHERS

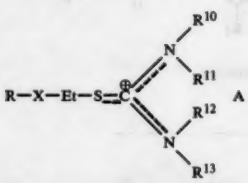
Peter Bergthaller, and Peter Wenzl, both of Cologne, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,044
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934948
Int. Cl.³ C07C *148/00*
U.S. Cl. 568—50 **6 Claims**

1. A process for the preparation of a compound of the following structural formula

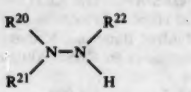
(I)

by treating a compound of the following structural formula



(II)

with a compound of the following structural formula



(III)

in which

R represents an organic radical comprising at least one alkyl, aralkyl or aryl group which may be substituted and which may be interrupted by S- and/or O-atoms,

X represents an oxygen atom or a sulphur atom,

Et represents an ethylene group which may be substituted and which may form part of a 5- or 6-membered ring system,

R^{10} to R^{13} which may be the same or different, represent H; an alkyl group having from 1–6 C-atoms which may be substituted or an aryl radical which may be substituted and/or at least one pair of the substituents R^{10} to R^{13} may represent the atoms required to complete a heterocyclic 5- or 6-membered ring,

R^{20} to R^{22} which may be the same or different, represent hydrogen, an alkyl group having from 1–5 C-atoms or aryl radical which may be substituted or

R^{20} together with R^{21} represent the atoms required to complete a ring,

A represents an anion which may be multivalent.

4,355,186

PROCESS FOR THE PREPARATION OF 4-PHENOXY-PHENOLS

Werner Becker, Frankfurt am Main; Klaus Dehmer, Kelkheim; Klaus Kaiser, Frankfurt am Main, and Karl Rehn, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

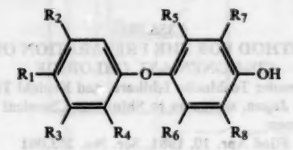
Filed Jun. 25, 1981, Ser. No. 277,288

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024157

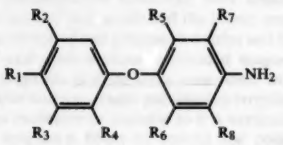
Int. Cl.³ C07C *149/34, 149/36, 41/26*

U.S. Cl. 568—52 5 Claims

1. In process for the preparation of a 4-phenoxyphenol of the formula



in which R_1 is hydrogen, methylthio, cycloalkyl, aryl or halogen, R_2 and R_3 independently of one another each is hydrogen, halogen or alkyl, R_4 is hydrogen, alkyl, cycloalkyl or halogen, R_5, R_6 and R_7 independently of one another each is hydrogen or alkyl and R_8 is hydrogen or alkyl, by diazotizing the corresponding aniline of the formula



and subsequently decomposing the resulting diazonium salt or salts by boiling with sulfuric acid, the improvement which comprises simultaneously adding the aniline, in the liquid or molten state, and aqueous nitrate-free sodium nitrite solution in a molar ratio of about 1:1 at 0°–50° to an excess of aqueous hydrochloric acid of 10 to 20% strength and introducing the diazonium chloride solution obtained into a boiling mixture of approximately half-concentrated sulfuric acid of 50 to 70% strength and an aromatic hydrocarbon, hydrochloric acid being distilled off simultaneously.

4,355,187

PROCESS FOR THE MANUFACTURE OF METHYL GLYOXAL

Herbert Baltes, Frankfurt am Main, and Ernst I. Leupold, Neu-Anspach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,914

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012004

Int. Cl.³ C07C *45/29, 45/32*

U.S. Cl. 568—471 3 Claims

1. A process for the manufacture of methyl glyoxal which comprises oxidizing propylene glycol-1,2 in the gaseous phase with an excess of oxygen and in the presence of a heterogeneous catalyst containing molybdenum in admixture with at least one element selected from the group consisting of vanadium, silver, copper, sodium, potassium, magnesium and barium.

4,355,188

METHOD FOR TREATING POLYPROPYLENE ETHER AND POLY-1,2-BUTYLENE ETHER POLYOLS

Robert J. Herold, and Robert E. Bingham, both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 6,197,418, Oct. 16, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,432

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—620 5 Claims

1. The method which comprises treating a polyol selected from the group consisting of polypropylene ether polyol and poly-1,2-butylene ether polyol and mixture of the same, said polyol containing catalyst residues of the double metal cyanide complex class, with a treating agent selected from the group consisting of sodium metal, potassium metal, sodium hydroxide and potassium hydroxide in an amount and at a temperature and for a time sufficient to convert said catalyst residues to ionic species, adding ethylene oxide to said polyol while said polyol is in admixture with said treating agent present in an amount at least sufficient to convert at least some of, preferably all of, the secondary hydroxyl groups of said polyol to primary hydroxyl groups and then removing said ionic species and said treating agent from said polyol, said polyol having been made by polymerizing propylene oxide or 1,2-butylene oxide or mixture of the same with a copolymerizable initiator or telogen consisting essentially of a polyol having from 2 to 8 hydroxyl groups, 2 to 21 carbon atoms and consisting of carbon, hydrogen and oxygen using a polymerization catalyst of the double metal cyanide complex class.

4,355,189

PROCESS FOR THE PREPARATION OF 4-PHENOXYPHENOLS

Gert Volkwein, Kelkheim; Hubert Schönowsky, Rödermark, and Konrad Baessler, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

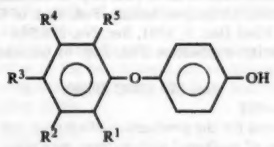
Filed Feb. 6, 1981, Ser. No. 232,210

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004610

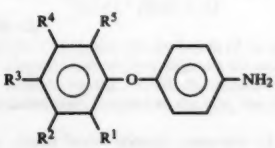
Int. Cl.³ C07C *41/26*

U.S. Cl. 568—637 4 Claims

1. In a process for the preparation of a 4-phenoxyphenol of the formula



in which R^1 through R^5, independently from each other, are hydrogen, halogen or lower alkyl, by diazotization of an amine of the formula



in which R^1 through R^5 are as defined above, in an aqueous mineral acid medium, and boiling, the improvement which comprises carrying out said diazotization in an acid medium consisting essentially of aqueous hydrochloric acid, and carrying out said boiling in aqueous sulfuric acid at a temperature of

from 110° to 150° C. and in the presence of a water-immiscible solvent which dissolves said 4-phenoxyphenol.

4,355,190

PROCESS FOR RECOVERY OF RESORCINOL FROM AQUEOUS RESORCINOL SOLUTION CONTAINING HYDROQUINONE

Hirohiko Nambu; Fujihisa Matsunaga, and Hiroaki Nakagawa, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,123
Claims priority, application Japan, Dec. 13, 1979, 54-160878
Int. Cl.³ C07C *37/68*
U.S. Cl. 568—754 3 Claims

1. A process for recovery of resorcinol from an aqueous resorcinol solution containing hydroquinone which comprises oxidizing an aqueous resorcinol solution containing about 10 to about 60% by weight of resorcinol and up to about 1% by weight of hydroquinone with molecular oxygen at conditions of pH 6.5 to 9.5, and a temperature of about 50° to about 100° C., followed by recovering resorcinol from the resultant oxidation product.

4,355,191

Patent Not Issued For This Number

4,355,192

PROCESS FOR THE PRODUCTION OF ETHANOL AND N-PROPANOL FROM METHANOL

Boy Cornils, Dinslaken; Carl D. Frohning, Oberhausen; Gerhard Diekhaus, Oberhausen; Ernst Wiebus, Oberhausen, and Helmut Bahrmann, Hünxe, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 328,984
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046481
Int. Cl.³ C07C *29/00*
U.S. Cl. 568—902 10 Claims

1. In a process for the production of ethanol and n-propanol by conversion of methanol with carbon monoxide and hydrogen at temperatures of 150° C. to 250° C. in the presence of a catalyst containing cobalt, platinum, at least one halogen or halide, and an organic compound which is phosphine or phosphite, the improvement which comprises said halogen or halide being chlorine or a chloride, and said compound being bi-dentate, said conversion being carried out at pressures of 200 to 800 bars in the presence of 5 to 25% by weight of water, based on said methanol.

4,355,193

METHOD FOR THE PREPARATION OF CIS-NONEN-6-YL CHLORIDE

Akira Yamamoto; Toshinobu Ishihara, and Kenichi Taguchi, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 253,061
Claims priority, application Japan, Apr. 14, 1980, 55-48935
Int. Cl.³ C07C *17/26*
U.S. Cl. 570—217 5 Claims

1. A method for the preparation of cis-nonen-6-yl chloride which comprises reacting the Grignard reagent of cis-hexen-3-yl chloride with 1-bromo-3-chloropropane in the presence of a catalyst selected from the group consisting of lithium copper dichloride and dilithium copper tetrachloride.

4,355,194

METHOD FOR PREPARING HIGH DENSITY LIQUID HYDROCARBON FUELS

Richard V. Norton, Dublin; Dennis H. Fisher, Westerville; Garry M. Graham, Plain City, and Peter J. Frank, Westerville, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 6, 1980, Ser. No. 204,436
Int. Cl.³ C01L *1/04*
U.S. Cl. 585—14 4 Claims

1. In a method for preparing an isomeric mixture of the hexacylic dimer of norbornadiene containing a major amount of the endo, endo stereo isomer thereof wherein said diene is dimerized in the presence of a catalytic amount of a zero valent iron complex; the improvement of isomerizing said dimer mixture in the presence of an alumina silica catalyst to effect the reduction of the endo, endo isomeric content thereof to between about 10 and 35 weight percent.

4,355,195

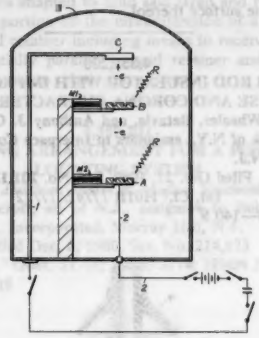
ELECTROMAGNETIC SOLAR CELL

Ralph Sansbury, GPO Box #1433, New York, N.Y. 10116

Continuation-in-part of Ser. No. 168,467, Jul. 14, 1980, abandoned. This application Mar. 30, 1981, Ser. No. 249,185

Int. Cl.³ H01C *31/04*

U.S. Cl. 136—254 1 Claim



1. A solar cell comprising an evacuated glass enclosure; at least one photoactive strip having an upper surface comprising photoemissive material on a crenulated substrate; a non-photoactive strip constituting an anode overlying and spaced from said photoemissive surface(s): wire conductor means attached to each of said anode and the lower, non-photoemissive surface of one of said photoactive strips and leading to the outside of said glass enclosure; shielded magnet means for providing magnetic lines of force coincident with the upper photoemissive surface of said photoactive strip(s); and as part of the glass enclosure or exterior to it a vertical polarization filter and frequency filters to restrict the polarization and frequency of the light impinging on the photoemissive surface(s).

4,355,196

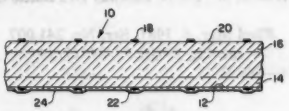
SOLAR CELL HAVING IMPROVED BACK SURFACE REFLECTOR

An-Ti Chai, North Ridgeville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,796

Int. Cl.³ H01L *31/04, 31/18*

U.S. Cl. 136—259 6 Claims



6. In a solar cell of the type comprising

a wafer of photovoltaic material having a front surface for receiving light and an oppositely disposed back surface, the improvement comprising

a plurality of electrodes of a first metal material having a finger pattern in good ohmic contact with said back surface, and

a layer of a second different metal reflective material covering said back surface in the spaces between said electrodes thereby forming a back surface reflector.

4,355,197

SERVICE LINE TERMINAL BOX SYSTEM, ESPECIALLY FOR SHIPS MOORED TO QUAYS

Lennart C. B. Jönsson, Höllviksnäs, Sweden, assignor to Ann-Marie Jönsson; Jane Jönsson and Asa Jönsson, all of Höllviksnäs, Sweden

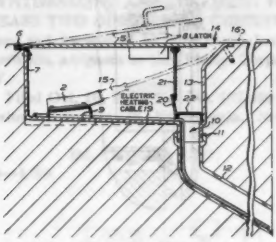
PCT No. PCT/SE79/00187, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00583, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 13, 1979, Ser. No. 196,222

Claims priority, application Sweden, Sep. 15, 1978, 7809720

Int. Cl.³ E02B *3/20;* E03B *9/08;* H02G *9/00*

U.S. Cl. 174—37 8 Claims



1. A service line terminal box system for supplying facilities at predetermined points outdoors, comprising

a plurality of service line terminal boxes positioned at predetermined points in a surface located outdoors and each having four side walls and a bottom which is inclined towards a drain hole connected to a drain pipe,

a coverplate for each of the boxes countersunk in said surface at the predetermined points of the boxes, over which coverplates vehicles can be driven, each coverplate being self-locking and in closed position resting on the upper edges of three of the four side walls of the respective terminal box,

a service line socket outlet in each box, the upper part of the fourth side wall of each box being deflected outwardly to form an opening to the interior of the box to permit passing therethrough a line releasably connectible to the service line socket outlet in the box, the drain hole of each box being positioned adjacent the fourth side wall,

one or more service supply lines fixedly connected through holes in the walls of each box to the service line socket outlet in the box,

and each of the boxes having a splash plate extending from the bottom of the box toward the coverplate, said splash plate being situated between the drain hole and the service line socket outlet.

4,355,198

SCREW RETAINING AND ALIGNING COVER PLATE

Albert J. Gartland, Jr., Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jan. 19, 1981, Ser. No. 226,127

Int. Cl.³ H02G *3/14*

U.S. Cl. 174—66 36 Claims

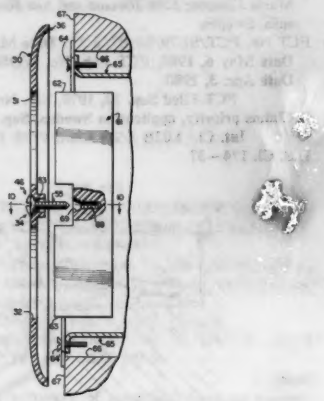
1. A plate for completing the enclosure of an outlet box, the plate being adapted to be secured adjacent the box by means of a threaded member having a head, the member being receivable in a threaded bore coupled to the box, the plate comprising:

a generally planar body portion composed of a polymeric material;

means defining an aperture in said body portion for receiving the threaded member therethrough, said aperture having a countersink portion for seating the head of the threaded member thereon; and

flexible means integral with said body portion and extending

into said aperture, for engaging a threaded portion of the threaded member when the member is fully inserted into said aperture to align the longitudinal axis of the threaded



member substantially perpendicular to said body portion for ease of insertion of the threaded member into the threaded bore coupled to the box.

4,355,199

CONDUCTIVE CONNECTIONS

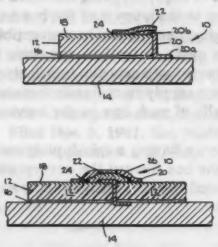
Penelope J. V. Luc, c/o 38 Church St., Bookham, Surrey, England

Continuation of Ser. No. 731,082, Oct. 8, 1976, abandoned. This application Jan. 4, 1980, Ser. No. 109,664

Claims priority, application United Kingdom, Oct. 10, 1975, 41691/75

Int. Cl.³ H05K *1/00*

U.S. Cl. 174—68.5 **3 Claims**



1. A conductive connection particularly for use in electrically grounding the exposed metal surface of a spacecraft comprising:

(a) a structure having a metallic surface;

(b) a first film material consisting of a non-conductive planar plastic base material to which is affixed an extremely thin metallized upper surface, said first film material being securably affixed, at its plastic base, to a predetermined area on said metallic surface of said structure such that the extremely thin metallized upper surface of said first film material faces away from the metallic surface of said structure and is separated therefrom by said plastic base;

(c) a conductive member having a first portion securably bonded to, and in direct electrical contact with the metallic surface of said structure at an area removed from the area to which said first film material is applied, and a second portion disposed above, and securably bonded in electrical contact with, the extremely thin metallized surface of said first film material through a second thermoplastic film material interposed such that its entire surface lies between and in contact with said extremely thin metallized surface of said first film material and the second portion of said conductive member, said second film material consisting of a non-conductive plastic planar base material to which a thin metallized layer is affixed on at least one surface thereof.

4,355,200

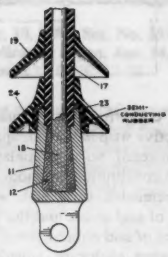
POLYMER ROD INSULATOR WITH IMPROVED RADIO NOISE AND CORONA CHARACTERISTICS

Edward S. Wheeler, Batavia, and Anthony J. Campagna, Amherst, both of N.Y., assignors to Interpace Corporation, Parsippany, N.J.

Filed Oct. 27, 1980, Ser. No. 201,136

Int. Cl.³ H01B *17/42, 17/12*

U.S. Cl. 174—140 S **3 Claims**



1. An elongated high voltage insulator, for use with voltages in excess of 138 kV in an outdoor environment, and comprised operatively of:

an insulator member of nonconducting material,

a high voltage metal fitting secured to the insulator member,

a plurality of elastomeric segments on the insulator member with a proximal one of said segments contacting the high voltage metal fitting,

a portion of said proximal segment composed of semiconductive elastomeric material bearing directly against and providing an equipotential surface in contact with said high voltage metal fitting,

said proximal segment having nonconducting elastomeric material embracing said elastomeric semiconductive material to shield it from the environment.

4,355,201

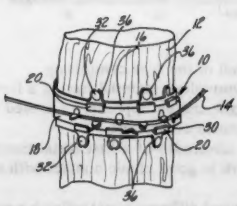
ELECTRIC FENCE WIRE MOUNTING STRUCTURE

Robert M. Wilson, Sr., 190 N. Eastway Dr., Battle Creek, Mich. 49016

Filed Mar. 6, 1981, Ser. No. 241,007

Int. Cl.³ H01B *17/24, 17/16*

U.S. Cl. 174—166 R **12 Claims**



1. An electric fence wire mounting structure for supporting

a high tensioned and electrically charged wire from a generally cylindrical fence post at either a corner or at the end of a line of fencing, comprising: an elongated strap of electrically non-conductive material, an elongated metal retainer, means supporting said retainer in substantially parallel and engaging relation to said strap, and strap and retainer being longitudinally flexible, means on said strap spaced from said retainer to receive fasteners adapted to hold said strap and retainer as a unit around a portion of the circumference of a cylindrical post, said metal retainer including means to receive a wire to extend substantially parallel to said retainer and strap and maintain it in position relative to a post.

4,355,202

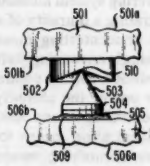
MOUNTING ARRANGEMENT FOR A POSITION LOCATING SYSTEM

John DeCosta, Jackson; James B. Mallos, Freehold, and David B. Roe, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1980, Ser. No. 214,173

Int. Cl.³ G08C *21/00*; G01G *3/14*; H04N *1/00*

U.S. Cl. 178—18 **21 Claims**



1. Apparatus for mechanically coupling a first rigid body **(501)** having a surface **(501*a*** or **501*b*)** associated therewith which is exposed to the application of a localized force (F), a second rigid body **(506)**, and a force sensing member **(504)** positioned between the first and second rigid bodies

characterized in that

the coupling apparatus is associated with the force sensing member **(504)** so that the force sensing member detects a perpendicular component force (F_1) comprising a perpendicular component of the applied localized force (F) at a predetermined point of action **(510)**, the coupling apparatus providing support to the first rigid body **(501)**.

4,355,203

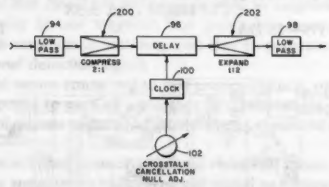
STEREO IMAGE SEPARATION AND PERIMETER ENHANCEMENT

Joel M. Cohen, P.O. Box 135, Brookline, Mass. 02146

Continuation-in-part of Ser. No. 129,971, Mar. 12, 1980, Pat. No. 4,308,423. This application Sep. 8, 1980, Ser. No. 185,135

Int. Cl.³ H04R *5/00*

U.S. Cl. 179—1 G **5 Claims**



1. Apparatus for noise limited stereo image separation and perimeter enhancement for use with stereophonic audio reproduction means having left and right channel outputs, comprising:

means for deriving a difference signal from the signals in said left and right channel outputs;

means for amplitude compressing said difference signal;

a clocked bucket brigade device for delaying said amplitude compressed signal;

means for amplitude expanding said delayed signal; and,

means coupled to said expanding means for phase splitting said expanded signal and coupling the two phases of said expanded signal into said left and right channels so as to subtract delayed left minus right and right minus left components from the correspondingly opposite channels.

4,355,204

SPEECH SYNTHESIZING ARRANGEMENT HAVING AT LEAST TWO DISTORTION CIRCUITS

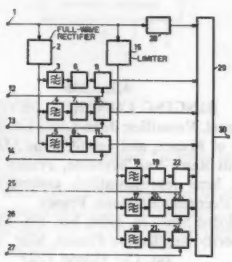
Karel Riemens, and Joannes G. M. Van Thuijl, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1980, Ser. No. 197,450

Claims priority, application Netherlands, Nov. 9, 1979, 7908213

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA **2 Claims**



1. An arrangement for synthesizing speech from a band of low-frequency components of a speech signal and a plurality of narrow-band control signals which are characteristic of a plurality of sub-bands of high-frequency components of the speech signal, comprising means for generating a band of high-frequency components from the band of low-frequency components, means for dividing the band of high-frequency components into a number of sub-bands corresponding to the sub-bands of high-frequency components of the speech signal, means for correcting by means of the control signals the sub-bands derived from the generated band and means for combining the band of low-frequency components with the corrected sub-bands of the generated high-frequency components to form a speech output signal, characterized in that the means for generating a band of high-frequency components comprises at least two circuits, each generating a band of high-frequency components from the band of low-frequency components of the speech signal, a portion of the number of sub-bands being derived from each of the generated bands.

4,355,205

TELEMETERING SYSTEM

Harold R. Walker, Middlesex, N.J., assignor to Frank E. Lowe, Pittsburgh, Pa.

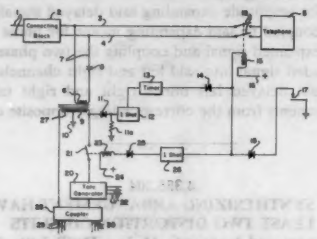
Filed Jul. 24, 1980, Ser. No. 172,028

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 A **5 Claims**

1. A telemetering system for use with a telephone installation comprising normally open first switch means connected between a telephone set and telephone line, second switch means connected to the line and operable by a ringing signal on the

line, said second switch means being operated by a ringing signal to impose a responding signal on the line momentarily



and thereafter to close the first switch means and connect the telephone set to the line.

4,355,206

RINGING CONTROL DEVICE

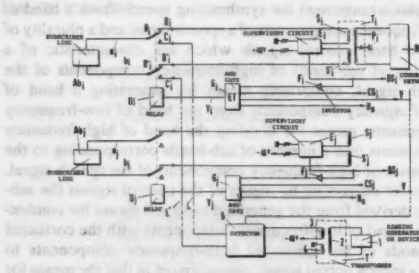
Renato G. Israel, Versailles; Jean-Louis Lavoisard, Joinville-le-Pont, both of France, and Jean-Claude Marchand, deceased, late of Saint Remy-les-Chevreuse, France (by Colette A. M. Marchand, legal representative), assignors to Societe Anonyme de Telecommunications, France

Filed Mar. 25, 1980, Ser. No. 133,871

Claims priority, application France, Mar. 30, 1979, 79 07999

Int. Cl.³ H04M *3/02*

U.S. Cl. 179—18 HB **5 Claims**



1. A ringing control device for a group of subscriber lines served by a connection network, comprising a relay for each line, the connection network providing a ringing control signal and a timing signal for controlling the relay, a ringing generator common to the group of lines and providing an A.C. ringing current to a line when the corresponding relay occupies a first position, a supervisory circuit for each line, connected thereto in the second position of the relay and delivering a signal to the connection network if the receiver is lifted whilst the relay occupies said second position, and a common off-hook condition detector delivering a signal if a D.C. current appears, due to the receiver being lifted, on at least one of the lines of the group while a ringing current is being fed (first position of the relay), wherein the ringing control device comprises AND means receiving from the connection network the ringing control signal and the timing signal and connected to the supervisory circuit and to the off-hook condition detector and whose output signal controls the relay.

4,355,207

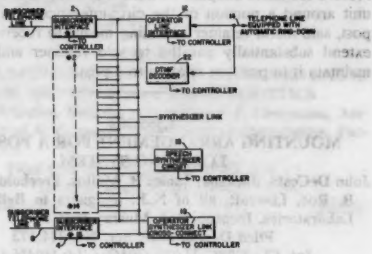
TELEPHONE ANSWERING SYSTEM

William J. Curtin, Madison, Wis., assignor to Amtel Communications, Inc., Madison, Wis.

Filed May 30, 1980, Ser. No. 154,914

Int. Cl.³ H04M *3/50*

U.S. Cl. 179—18 FC **19 Claims**



1. A telephone answering system including a call concentrating means for concentrating a plurality of subscriber telephone lines coupled to said concentrating means through a single telephone circuit to a single answering station so that an operator at the answering station can be connected to and answer telephone calls to any one of the plurality of subscriber telephone lines, said concentrating means comprising: input means for coupling said concentrating means to a plurality of subscriber telephone lines; identifying means for generating an identification signal identifying each subscriber line when such line receives a call; output means for coupling said concentrating means to an answering station through a single telephone circuit with said identifying means first transmitting the identification for a subscriber line over the single telephone circuit before establishing a connection between a caller and the answering station, said output means allowing an operator at the answering station to select for reception between only the identification signal and the identification signal immediately followed by connection to the call coupled from the corresponding subscriber line; and remote hold means for answering incoming calls to the subscriber telephone lines that are coupled to said concentrating means and holding such calls when one of the other subscriber lines is already coupled to the answering station.

4,355,208

TELEPHONE CALL DENIAL SYSTEM

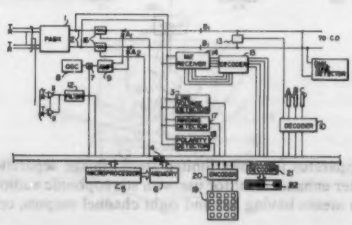
John A. Cribb, Ottawa; John R. Whitbread, Ashton; Graham Neathway, Ottawa, and Robert A. Durance, Kanata, all of Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Nov. 5, 1980, Ser. No. 204,151

Claims priority, application Canada, Aug. 27, 1980, 359108

Int. Cl.³ H04M *1/66, 3/38*

U.S. Cl. 179—18 DA **11 Claims**



5. Apparatus for detecting that a subscriber's line out of a

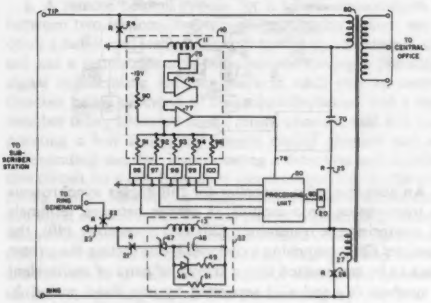
group of subscribers' lines has accessed a trunk to initiate a call comprising means for detecting seizure of a trunk, a load switchable across the trunk, means for splitting the trunk at a location between the load and the subscriber's line, a tone generator for generating a tracer signal switchable to the trunk leading to the subscriber's line when the trunk is split, means for switching the load across the trunk, splitting the trunk and connecting the tone generator upon detection of seizure of the trunk, means for detecting the tracer signal on at least one of the subscribers' lines of the group, and means for releasing the load, reconnecting the trunk and disconnecting the tone generator upon detection of the tracer signal on said one of the subscribers' lines of the group.

4,355,209

PROGRAMMABLE LINE CIRCUIT

Robert J. Sabon, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,669
Int. Cl.³ H04G *1/30*; H04M *3/00*
U.S. Cl. 179—18 FA **9 Claims**



1. A telephone supervision circuit for use in a telephone switching system, including battery and ground sources, a processing unit operated to provide a plurality of control signals, and a ringing relay connected to and periodically operated by said processing unit, said ringing relay including a first pair of contacts, and said supervision circuit connected to a subscriber station by a subscriber loop circuit, said supervision circuit comprising:

magnetic flux generating means included in said subscriber loop operated in response to current flow from said battery to said ground in said subscriber loop to generate a magnetic flux of an intensity proportional to said current flow;

magnetic flux detection means connected in magnetic field proximity to said magnetic flux generating means operated in response to said magnetic flux to generate a proportional detection signal;

threshold means connected to said processing unit, operated in response to each of a plurality of combinations of said control signals to provide an associated threshold signal; and

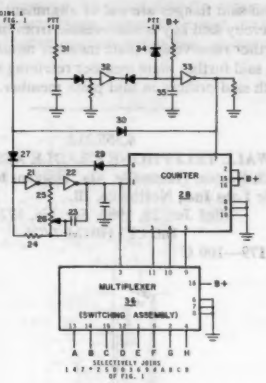
comparison means connected to said threshold means, operated in response to each threshold signal to compare said detection signal to said threshold signal; said comparison means further operated in response to said detection signal being greater than said threshold signal to generate a comparison signal of a first characteristic; said comparison means further operated in response to said threshold signal being greater than said detection signal to generate a comparison signal of a second characteristic.

4,355,210

SUB-MINIATURE TONE ENCODER WITH AUTOMATIC NUMBER IDENTIFICATION

Charles Soulliard, Tucson, Ariz., assignor to Midian Electronics, Inc., Tucson, Ariz.

Filed Sep. 22, 1980, Ser. No. 189,206
Int. Cl.³ H04M *1/50*
U.S. Cl. 179—84 VF **10 Claims**



1. A tone encoder, comprising:

a selective switching means;

a counter for providing incrementing pulses to said selective switching means;

a clocking pulse train generator responsive to an output of said counter for incrementing said counter;

a tone burst generator for simultaneously providing two audio tone bursts; and

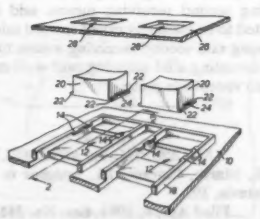
an isolation matrix for coupling said selective switching means to said tone burst generator whereby said selective switching means controls the frequency of the outputs of said tone burst generator.

4,355,211

PUSH BUTTON KEY MODULES

Frederick Steiner, Stapleford, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 10, 1981, Ser. No. 233,207
Claims priority, application United Kingdom, Feb. 13, 1980, 8004768
Int. Cl.³ H04M *1/23*
U.S. Cl. 179—90 K **5 Claims**



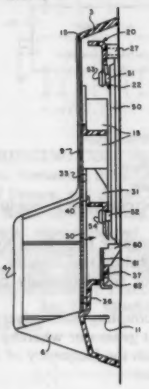
1. A push button key module comprising a plate member with a plurality of orifices formed therein, said plate member having a plurality of projections spaced from the surface of said plate, two of said projections extending into line with each of said orifices from opposite sides thereof, a plurality of keys, each of said keys being capable of passing through an orifice in said plate member and being provided on opposite sides with

flanges, said two projections and said flanges being in alignment when said key is aligned with one of said orifices, spring means associated with each orifice such that when a key is aligned with an orifice said spring means urges said key until said flanges contact said two projections and said key passes into said orifice when moved to overcome said spring means, each key being displaceable in a direction parallel to the plane of said plate member until each key is out of alignment with an orifice and said flanges are out of alignment with said projections whereby said key is removeable from said plate member, and a further removeable plate member mounted on said plate member, said further plate member retaining said keys in alignment with said orifices in said plate member.

4,355,212
WALL TELEPHONE CRADLE ASSEMBLY

Richard B. Kosten, Huntsville, Ala., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jul. 25, 1980, Ser. No. 172,337
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—100 C **5 Claims**



1. A wall-mounted assembly for receiving a telephone set, said assembly adapted to be secured to a wall-mounted receptacle plate having a front face and first and second mounting studs extending outwardly from said front face, said wall mounted assembly comprising:

a unitary housing having a front surface arranged for receiving said telephone set;

first receiving means integrally joined to said housing for engaging said first mounting stud;

flexible structure integrally joined to said housing and including second receiving means, said flexible structure adapted to be manually urged toward said receptacle plate allowing said second receiving means to engage said second mounting stud securing said wall-mounted assembly to said receptacle plate.

4,355,213
MICROPHONE ASSEMBLY

Richard E. Marsh, Chicago, Ill., assignor to Marsh Products, Inc., Batavia, Ill.

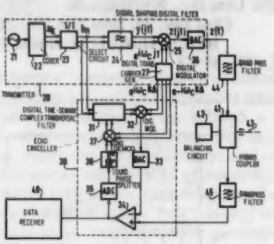
Filed Apr. 6, 1981, Ser. No. 251,376
Int. Cl.³ H04R *1/00*
U.S. Cl. 179—146 R **6 Claims**

1. A microphone mounting assembly for mounting a microphone module therein, said assembly comprising an elongated tubing, a mounting member having a channel therein for receiving said tubing, flexible means, means for retaining said flexible means in said mounting member and in position adjacent said channel, said flexible means compressingly engaging the surface of said tubing to thereby hold said tubing in a selected position.

4,355,214
ADAPTIVE ECHO CANCELLER FOR FULL-DUPLEX TRANSMISSION OF DATA

Michel Levy, Massy, and Jean-Philippe Haag, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jun. 23, 1980, Ser. No. 161,969
Claims priority, application France, Jun. 22, 1979, 79 16087
Int. Cl.³ H04B *3/24*
U.S. Cl. 179—170.2 **6 Claims**



1. An adaptive echo canceller for full-duplex synchronous data transmission on a modulated carrier between terminals each comprising a transmitter (20) and a receiver (40), the transmitter (20) comprising a coder (22) converting the stream of data to be transmitted into a stream of pairs of multivalent real symbols (a'_k and a''_k) separated by one Baud period Δ, each pair of multivalent real symbols (a'_k and a''_k) defining the real and imaginary parts of a single complex symbol (a_k), and a modulator (25) using a carrier frequency (f_c) to transpose the complex symbols at the output from the coder (22) into the passband, the echo canceller being connected in one terminal between the output of the coder (22) of the transmitter (20) and the input of the receiver (40), wherein the canceller comprises:

a time-domain complex transversal filter (31) with controlled weighting coefficients and intertap interval T which is a submultiple 1 of the Baud period (Δ), receiving on respective inputs the real and imaginary parts of a stream of complex symbols b_n at a transmission rate 1/Δ comprising the complex symbols a_k delivered from the coder (22) of the transmitter interleaved with 1−1 null symbols and providing the real and imaginary parts of a complex output signal at respective outputs, at a sampling rate 1/Δ;

a digital modulator (32) connected to the output of the complex transversal filter (31), receiving the carrier frequency (f_c) of the modulator (25) of the transmitter (20) with instantaneous values updated once every Baud period Δ;

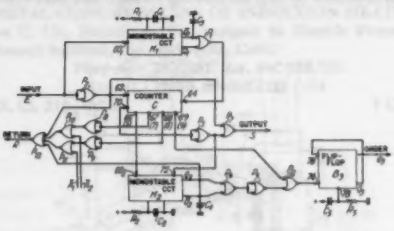
a circuit (34) subtracting the output signal of the digital modulator (32) from the received signal to provide the input signal to the receiver (40); and

a digital demodulator (37) receiving the input signal to the receiver (40) in digital form and the carrier frequency (f_c) of the modulator (25) of the transmitter (20) with instantaneous values updated once every Baud period Δ, and providing an output signal which is used to control the weighting coefficients of the complex transversal filter (31).

4,355,215
REMOTE CONTROL SYSTEMS FOR TELECOMMUNICATIONS LINKS

Jacques Legras, 18, rue E. Le Taillandier, and Patrice Pyronnet, Bat. 332 Znp Keruhel, both of 22300 Lannion, France

Filed Oct. 7, 1980, Ser. No. 194,788
Claims priority, application France, Oct. 8, 1979, 79 24979
Int. Cl.³ H04B 3/46
U.S. Cl. 179—175.31 R 8 Claims



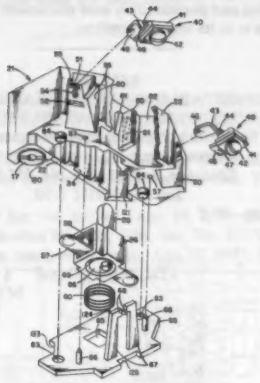
1. A remote control system for a telecommunications link between two stations, one being a monitoring station and the other a monitored station, interconnected by an outward channel and a return channel, said channels having a plurality of signal regenerating member pairs, in each pair an outward member being allocated to the outward channel and a return member being allocated to the return channel, said link incorporating a low frequency remote supply channel and each regenerating member incorporating a detection and amplification circuit for a low frequency signal transmitted by the monitoring station, said circuit being connected between the output and input of each member, each pair of regenerating members comprising means for permitting a remote control operation of said pair from the monitoring station, each pair also having a control circuit of said remote control means, the monitoring station comprising means for transmitting by the low frequency channel and in the outward direction a sequence of P pulses, the number P being regulatable; the control circuit placed in each pair of regenerating members having an input connected to the detection and amplification circuit of the low frequency signal, a first output connected to the output of the outward member and a second control output, and comprising means for detecting the pulses received on said input, for counting the number n of said pulses, for comparing said last number with two predetermined numbers n_1 and n_3, with $n_3 \neq 0$ and $n_3 < n_1$ and when $n \geq n_1$ transmitting to the first output $n - n_2$ the pulses received, n_2 being a given number > 1 and when $n_3 < n < n_1$ transmitting to the second output the control order and transmitting no pulse to the first output, the number P of pulses transmitted by the monitoring station being selected equal to $Nn_2 + n_i$, in which n_i is a number between n_3 and n_1 when a remote control order has to be transmitted to the member occupying rank N on the outward channel.

4,355,216
ELECTRIC SWITCH

Hugh Kane, Chagrin Falls, and Bradford J. Williams, Willowick, both of Ohio, assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 2, 1981, Ser. No. 221,962
Int. Cl.³ H01H 15/00, 1/20
U.S. Cl. 200—16 A 19 Claims

1. A switch module including in combination
a case of insulating material having walls defining a central compartment;
a contact carrier mounted in the compartment for guided reciprocal movement between a first and a second position;
biasing means for urging the contact carrier toward said first position;
first and second stationary contact members each having a contact surface adjacent to one end thereof and a field termination adjacent to the opposite end thereof;
the walls of the case having apertures therethrough for receiving the first and second stationary contact members with the contact surfaces within the compartment and with the field terminations exterior of the compartment;
a conductive contact bridge mounted on said contact carrier; said conductive contact bridge making contact with

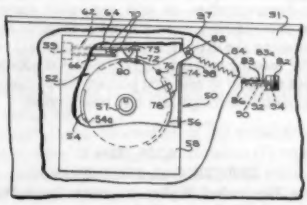


the contact surfaces of the first and second stationary contact members to provide a closed circuit therebetween when the contact carrier is in one of said positions, and being spaced from the contact surfaces of the first and second stationary contact members to provide an open circuit therebetween when the contact carrier is in the other of said positions; and
a cover of insulating material attached to the case and forming a closure of the central compartment;
said cover having means engaging said first and second stationary contact members and securing them in fixed position with respect to the case.

4,355,217
SWITCH INHIBITOR FOR TIMERS

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 7, 1981, Ser. No. 223,078
Int. Cl.³ H01H 43/10
U.S. Cl. 200—38 R 11 Claims



1. An electromechanical timer comprising:
a housing;
a control cam rotatably mounted in said housing, said control cam comprising a plurality of cam surfaces;
a timer motor mounted in said housing for rotating said control cam;

a plurality of cam-actuated switches mounted in said housing for actuation by associated ones of said cam surfaces, said cam surfaces being contoured to provide predetermined sequential actuation of said associated ones of said switches;

option selection means manually movable between a first position and a second position and operative in its first position to inhibit cam actuation of at least one of said plurality of cam-actuated switches and in its second position to enable cam actuation of said one switch;

whereby said predetermined sequential actuation of said one switch is prevented when said selection means is in its first position and permitted by user placement of said selection means is in its second position.

4,355,218

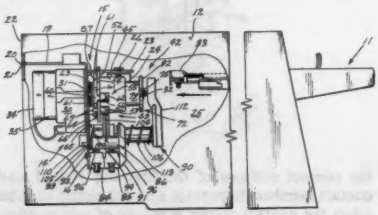
PRESETTABLE INDEX MECHANISM FOR SELECTIVELY ACTUATABLE TIMER

Daniel F. Wunderlich, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Apr. 6, 1981, Ser. No. 251,153

Int. Cl.³ H01H *7/00*

U.S. Cl. 200—38 F **19 Claims**



17. A selectively actuatable timing system for controlling an apparatus and presettable by a serviceman to one of a plurality of predetermined time periods for subsequent initiation of one time period by an operator, in combination comprising: a timer having cam means, switch means actuated by said cam means, and an output member rotatable at a timing speed, said cam means being rotatable with said output member and operable for actuating said switch means to provide an endless sequence of alternating intervals of apparatus-energizing and apparatus-deenergizing operation; auxiliary switch means in parallel circuit to said timer switch means; means drivingly connected to said output member and operable in a first posture for maintaining said auxiliary switch means in a closed position to provide an apparatus-energizing bypass circuit during all but the last apparatus-deenergizing interval of said cam means in said one time period and movable to a second posture responsive to a timed period of rotation of said output member for operating said auxiliary switch means to an open position for effecting deenergization of said apparatus during said last apparatus deenergizing interval; and actuatable means operable for releasing the driving connection with said output member and for moving said drivingly connected means relative to said output member to said first posture for initiating operation of said apparatus through said one time period.

4,355,219

ELECTRICAL SWITCHGEAR

John Parry, Blackwood, Wales, assignor to South Wales Switchgear Limited, Blackwood, Wales

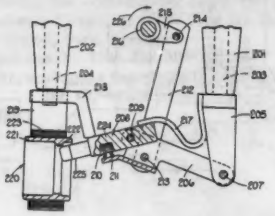
Filed May 20, 1980, Ser. No. 151,580

Claims priority, application United Kingdom, May 25, 1979, 7918466

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 R **18 Claims**

1. Electrical switchgear comprising a contact set having first contact means and second contact means, and moving means operative to move said contact set between a closed position in which said first and second contact means are mutually engaged and an open position in which said first and second contact means are mutually separated, a tubular arcing electrode to which said first contact means forms an arc during movement of said contact set from said closed position to said open position, and a field coil connected to said tubular arcing electrode, said tubular arcing electrode and said field coil having respective axes which are substantially co-incident, a current produced by said arc flowing through said field coil to



create a magnetic field which causes said arc to rotate and become extinguished, said first contact means having a part which engages said tubular arcing electrode before and for some time after said first and second contact means disengage and which moves to a position substantially on said axis of said tubular arcing electrode when said contact set moves to said open position, said first contact means having mounting means for said movement to be transversely of the axis of said field coil with said movement providing a lever action between said part and said second contact means for breaking any welds that may be formed between said contact means.

4,355,220

ELECTRICAL SWITCHGEAR OF THE ROTATING ARC, DOUBLE-BREAK TYPE

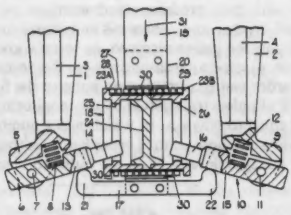
John Parry, Blackwood, Wales, assignor to South Wales Switchgear Limited, Blackwood, Wales

Filed May 20, 1980, Ser. No. 151,581

Claims priority, application United Kingdom, May 25, 1979, 7918466

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 R **20 Claims**



1. Electrical switchgear comprising a contact set composed of a pair of first contact means, second contact means, and moving means operative to move said contact set between a closed position in which said second contact means is engaged with said pair of first contact means and an open position in which said second contact means is disengaged from said pair of first contact means, a field coil located between and common to said pair of first contact means, said common field coil having a pair of terminal connections and an axis, and a pair of arcing electrodes electrically connected to said terminal connections of said common field coil respectively, each of said pair of first contact means forming a respective arc to a respec-

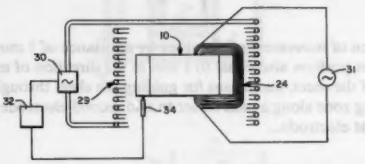
tive one of said arcing electrodes when said moving means is operated to move said contact set from said closed position to said open position, a current flowing through said common field coil produced by said arcs creating a magnetic field which causes said arcs to rotate and become extinguished, said common field coil being electrically isolated from said first contact means in said open position of said contact set.

4,355,221

METHOD OF FIELD ANNEALING AN AMORPHOUS METAL CORE BY MEANS OF INDUCTION HEATING

Kou C. Lin, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 20, 1981, Ser. No. 255,753
Int. Cl.³ H05B 6/40; C21D 1/04
U.S. Cl. 219—10.43 **7 Claims**



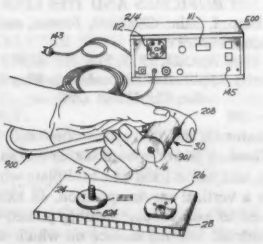
1. In an electrical transformer including a core initially formed from a continuous strip of amorphous metal wound about itself to form a closed-loop and at least one insulation coated transformer coil located around one circumferential section of said core, the material making up said coil being selected to have substantially lower electrical resistivity than said amorphous metal core, a method of annealing said core after said transformer coil has been positioned around said core section, said method comprising the step of placing said core and transformer coil in close proximity to an induction coil, exciting said induction coil with an alternating current for inducing current through said core and transformer coil to heat the core to satisfactory annealing temperatures for a period of time sufficient to anneal said core without heating said transformer coil to a temperature sufficient to damage its insulation coating during said period of time.

4,355,222

INDUCTION HEATER AND APPARATUS FOR USE WITH STUD MOUNTED HOT MELT FASTENERS

Glenn A. Geithman, Renton, and Donald F. Olsen, Hobart, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 8, 1981, Ser. No. 261,865
Int. Cl.³ H05B 6/14, 6/40
U.S. Cl. 219—10.57 **5 Claims**



1. In combination:

an induction heater probe having a ferrite core structure including an outer ferrite cup core portion surrounding an inner hollow cylinder-shaped portion surrounded by induction windings, said inner hollow cylinder-shaped portion adapted to receive a stud portion of a flat plate hot melt fastener;

an electromagnetic holding circuit for selectively applying an electromagnetic force to the flat plate portion of a flat plate hot melt fastener upon insertion of the stud portion of the flat plate hot melt fastener within said inner hollow cylinder-shaped portion of said flat plate hot melt fastener; and,

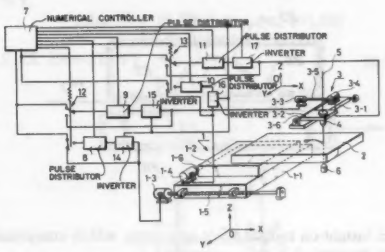
a power oscillator circuit for selectively generating eddy current flow in the flat plate portion of a flat plate hot melt fastener upon insertion of the stud portion of the flat plate hot melt fastener within said inner hollow cylinder-shaped portion of said flat plate hot melt fastener.

4,355,223

ELECTROEROSION METHOD AND SYSTEM FOR TAPER CUTTING WITH TRAVELLING WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, and Iwao Shibuya, Kawasaki, both of Japan, assignors to Inoue-Japax Research Inc., Yokohama, Japan

Continuation of Ser. No. 897,419, Apr. 18, 1978, abandoned. This application May 20, 1980, Ser. No. 151,723
Claims priority, application Japan, Apr. 25, 1977, 52-46761
Int. Cl.³ B23P 1/12
U.S. Cl. 219—69 M **11 Claims**



1. An electroerosion method for taper-cutting an electrically conductive workpiece with a wire electrode, said wire electrode travelling axially through the workpiece and being supported under tension between a pair of guide members disposed on opposite sides of the workpiece, at least one of said guide members being movable transversely to said travelling wire electrode, said method comprising the steps of:

effecting a contour-machining feed of said workpiece relative to said travelling wire electrode with machining feed pulses so as to effect the relative displacement of the workpiece to the wire electrode in a plane comprised of X and Y axes along a prescribed path under numerical control based upon stored information describing said path;

effecting displacement of said at least one movable guide member with guide feed pulses along x and y axes with a predetermined angle of inclination to a direction normal to said plane; and

adding to said stored information of the numerical control for each portion of said path information (1) representing a pulse ratio between said machining feed pulses for said contour-machining feed and guide feed pulses for said displacement of the at least one movable guide member and information (2) representing the plus or minus sign indicative of the direction of advance of said at least one movable guide member so as to conrollingly effect X-Y axes contour-machining feed and x-y axes displacement of the at least one movable guide member simultaneously and thereby taper-cut the workpiece.

4,355,224

COATED ELECTRODE

Jack H. Mesick; Lewis E. Shoemaker, and Richard F. Freeman, all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Aug. 15, 1980, Ser. No. 178,497
Int. Cl.³ B23K 35/30
U.S. Cl. 219—137 WM 8 Claims

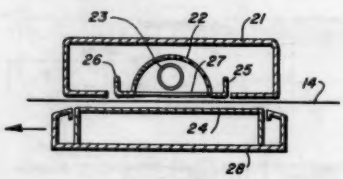
1. A coated welding electrode having a core wire comprising about 22% chromium, about 12.5% cobalt, 9% molybdenum, about 1.2% aluminum, about 0.07% carbon, about 1.5% iron, about 0.5% silicon, about 0.5% manganese, about 0.008% sulfur, about 0.3% titanium, about 0.2% copper, the balance being nickel and a flux coating disposed about the electrode including about 10–50% calcium carbonate, about 10–50% cryolite, about 5–35% titania, up to 30% silica, up to 15% wollastonite, about 5–20% chrome, about 2–15% manganese, up to 8% molybdenum, up to 2% nickel-carbon composite, up to 8% colloidal clay, up to 12% high melting oxide, up to 8% columbium and a silicate type binder.

4,355,225

INSTANT-ON RADIANT FUSER

Dana G. Marsh, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1981, Ser. No. 248,136
Int. Cl.³ H05B 1/00
U.S. Cl. 219—216 14 Claims



1. An instant-on radiant fuser apparatus, which comprises:
a first housing;
a low mass reflector means thermally spaced from said first housing, said reflector means being constructed to achieve operating temperature conditions within a few seconds without the use of standby heating device;
said first housing and said reflector means together forming a conduit for the passage of a cooling medium therein;
a second housing;
a low mass platen facing said reflector means and spaced therefrom, said platen being thermally spaced from said second housing and being constructed to achieve operating temperature conditions within a few seconds without the use of standby heating device;
said second housing and said platen together forming a conduit for the passage of a cooling medium therein; and
a source of radiant energy positioned adjacent said reflector means and between said reflector means and said platen.

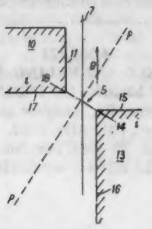
4,355,226

APPARATUS FOR THE SPARK PERFORATION OF SHEET MATERIALS

Robert J. Hall, Flackwell Heath, Nr. High Wycombe, England, assignor to Wiggins Teape Group Limited, England

Filed Jun. 30, 1981, Ser. No. 279,210
Claims priority, application United Kingdom, Jul. 8, 1980, 8022239
Int. Cl.³ H05B 7/18
U.S. Cl. 219—384 19 Claims

1. Apparatus for spark perforation of sheet material comprising spaced apart first and second electrodes which define between them a sparking zone through which sheet material to be perforated can be moved in a predetermined direction, and in which the portion of the first electrode which is nearest to the nearest portion of the second electrode is located between an overlap position upstream of the second electrode in the



direction of movement of the sheet by a distance of 1 mm and an offset position also equal to 1 mm in the direction of movement of the sheet, and means for guiding the sheet through the sparking zone along a path closer to said second electrode than said first electrode.

4,355,227

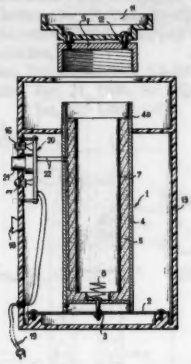
APPARATUS FOR THE DESTRUCTION OF MICROFICHES AND THE LIKE

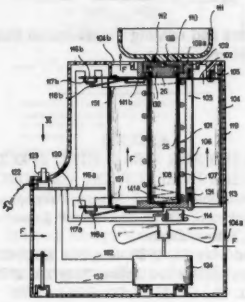
Jean-Claude Berard, Saint Chamond, France, assignor to SEB S.A., Selongey, France

Filed Apr. 23, 1979, Ser. No. 32,473
Claims priority, application Luxembourg, May 8, 1978, 79621
Int. Cl.³ H05B 3/00
U.S. Cl. 219—390 5 Claims

1. An apparatus for the destruction of microfiches, comprising a tubular heating jacket housed within and spaced from an outer housing, said jacket fixed on a base plate which maintains said jacket in a vertical service position, an axial cylindrical housing formed in said tubular heating jacket, said housing having a cylindrical internal surface on which is mounted an electrical heating resistor, a cylindrical metallic disposable tube removably housed in said housing, the external diameter of said tube corresponding to the internal diameter of said housing, said tube having a size such that it can receive at least one microfiche to be destroyed when rolled up along the axis of the tube, said tube having a leaktight plug for preventing

escape of gases generated during the destruction of microfiches, and said jacket comprising a cap which is adapted to be





mounted on said jacket for closing said housing and for bearing on the plug of the tube.

4,355,228

IMAGE ANALYZER WITH LIGHT PEN OR THE LIKE AND SHADING CORRECTOR

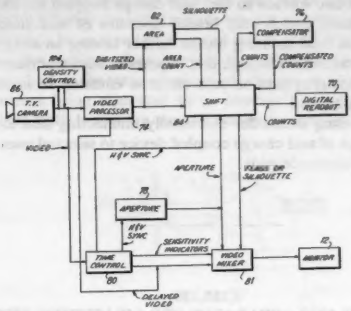
Stephen L. Sama, Seaford, and William R. Kitchener, Northport, both of N.Y., assignors to Artek Systems Corporation, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 883,996, Mar. 6, 1978, Pat. No. 4,203,029. This application Nov. 21, 1979, Ser. No. 96,437

Int. Cl.³ G06M *11/04*

U.S. Cl. 235—92 PC **8 Claims**

1. In an image analyzer for counting objects in a field, a shading corrector adapted for measuring the relative amount of chromophore in a scanned object comprising means to supply a stored video background signal, an attenuator for receiving and attenuating said signal, computer means for controlling said attenuator, means to supply an object-modulated video signal, comparator means for comparing the attenuated signal and the video signal to produce a comparator output signal, and area counter means to receive said output signal and develop a count proportional to the time-width of



the scan across the chromophore to represent the area of the chromophore, said count being fed to said computer means.

4,355,229

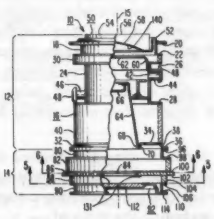
INTENSIFIED CHARGE COUPLED IMAGE SENSOR HAVING UNIVERSAL HEADER ASSEMBLY

Harlan S. Zimmerman, Columbia, and James L. Rhoads, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,350

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **16 Claims**



1. An intensified charge coupled image sensor of the type comprising:

(a) an inverter image intensifier tube including:

(1) an evacuated envelope having a longitudinally extending optical axis, and

(2) a photoemissive cathode within said envelope for emitting electrons in a pattern corresponding to the intensity of radiation incident thereon, and

(b) a universal header assembly comprising:

(1) a charge coupled device spaced from said cathode and disposed in a plane substantially orthogonal to said optical axis, said charge coupled device having an imaging area, an output register and a plurality of electrodes disposed on a surface of said device, said electrodes providing means for operating said sensor in one of a number of preselected modes,

(2) header means having a header aperture therethrough, said header aperture having a center slightly displaced in at least one dimension from said optical axis, said header means further having an electrode surface with a plurality of discrete electrode pads thereon, said plurality of electrode pads exceeding the number of electrodes required for the operation of said charge coupled device in any one of said number of preselected modes,

(3) securing means disposed between said cathode and said charge coupled device for resiliently holding said

charge coupled device, said securing means being attached to a surface of said header means opposite said electrode surface so that said charge coupled device is disposed within said header aperture of said header means, said securing means further having an imaging aperture therethrough that exposes at least a portion of the imaging area to said electron emission from said cathode, and

(4) bonding means for electrically connecting said electrodes of said charge coupled device to selected ones of said electrode pads.

4,355,230

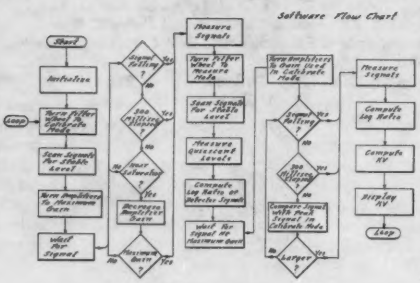
METHOD AND APPARATUS FOR MEASURING THE APPLIED KILOVOLTAGE OF X-RAY SOURCES

Stephen S. Wilson, 620 Felch St., Ann Arbor, Mich. 48103, and Peter M. Joseph, 1804 Bolton St., Baltimore, Md. 21217

Filed Nov. 18, 1980, Ser. No. 208,019

Int. Cl.³ G01D *18/00;* **G01J** *1/42;* **G06F** *15/42;* **G12B** *13/00*

U.S. Cl. 250—252.1 **8 Claims**



1. A method for measuring the applied kilovoltage of an X-ray source using a pair of detector channels, each comprising a detector and associated processing circuitry, and a plurality of absorbers including the steps of:

taking a first measurement of the X-ray intensities detected by said detectors through a first pair of absorbers of equal thickness during a first X-ray exposure,

taking a second measurement of the X-ray intensities detected by said detectors through a second pair of absorbers of unequal thickness during a second X-ray exposure,

modifying said second measurement in accordance with said first measurement to compensate for any differences in the characteristics between the two detector channels, and

deriving the applied kilovoltage from the difference of said subtraction.

4,355,231

REMOTE ANALYSIS USING THERMAL RADIATION

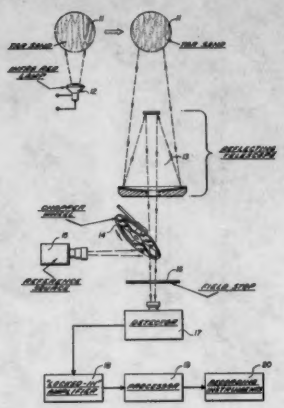
James L. Lauer, Ballston Lake, and Keyser K. Lau, Troy, both of N.Y., assignors to Suncor Inc., Toronto, Canada

Filed Aug. 25, 1980, Ser. No. 178,954

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—253 **9 Claims**

1. A method for remotely determining the concentration of a component in a mixture where said component has thermal characteristics different from other components in said mixture which comprises raising the temperature of the mixture, detecting and measuring the integrated thermal radiation from



the heated mixture and relating the measured flux to the concentration of said component.

4,355,232

APPARATUS FOR MEASURING SPECIMEN POTENTIAL IN ELECTRON MICROSCOPE

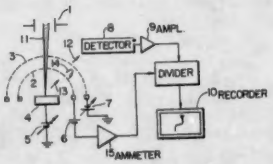
Hideo Todokoro, Hinodemachi; Satoru Fukuhara, Kokubunji, and Yoshio Sakitani, Ohimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,843

Claims priority, application Japan, May 28, 1979, 54-65029

Int. Cl.³ G01N *23/00;* **H01J** *37/00*

U.S. Cl. 250—310 **11 Claims**



1. An apparatus for measuring specimen potential in an electron microscope, comprising: first grid means arranged to at least partially enclose a specimen which is to be irradiated with a primary charged particle beam emitted from the electron source of the electron microscope; means for applying to said first grid means a first voltage sufficient to attract the secondary electrons emitted from said specimen; second grid means disposed on the side of said first grid means opposite said specimen; means for applying to said second grid means a second voltage so as to allow only those secondary electrons that have passed through the first grid means and which have an energy level greater than a selected value to pass through said second grid means; secondary electron detecting means for detecting the secondary electrons which have passed through the second grid means; current detecting means for detecting the current flowing through the first grid means; and dividing means for dividing the output of said secondary electron detecting means by the output of said current detecting means, whereby an output representing the potential at said specimen of said electron microscope is provided.

4,355,233

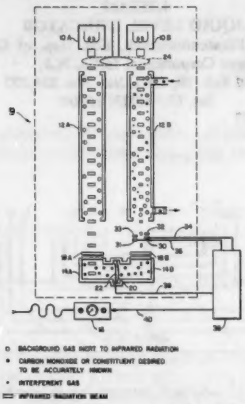
METHOD AND APPARATUS FOR NEGATING MEASUREMENT EFFECTS OF INTERFERENT GASES IN NON-DISPERSIVE INFRARED ANALYZERS

Dale F. Warnke, Irvine; Carl N. Cederstrand, Brea, and Charles A. Keenan, Irvine, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 13,945, Feb. 22, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,175

Int. Cl.³ G01J 1/00

U.S. Cl. 250—343 17 Claims


O BACKGROUND GAS INERT TO INFRARED RADIATION
* CARBON MONOXIDE OR CONSTITUENT DESIRED TO BE ACCURATELY KNOWN
• INTERFERENT GAS
INFRARED RADIATION BEAM

1. In a non-dispersive infrared analyzer having a pneumatic detector measuring the concentration of a preselected component gas by infrared energy absorption and producing a first signal representing component concentration, apparatus for negating the measurement effects of interferent gases comprising:

response means responsive to infrared energy for detecting the infrared energy absorbed by an interferent gas which absorbs infrared energy in the bandwidth of said preselected component gas and producing a second signal in response thereto;

filter means associated with said response means for permitting passage of an infrared bandwidth absorbed by said interferent gases while rejecting infrared bandwidths absorbed by said preselected component gas;

rectifier means connected to said response means for receiving said second signal and producing a substantially rectified third signal;

scaling means connected to said rectifier means for receiving said third signal and scaling said third signal to be compatible with said first signal; and

combining means connected to said scaling means and said pneumatic gas analyzer for combining said scaled third signal and said first signal and producing an output representative of said preselected component gas.

4,355,234

STABLE INFRARED ANALYZER

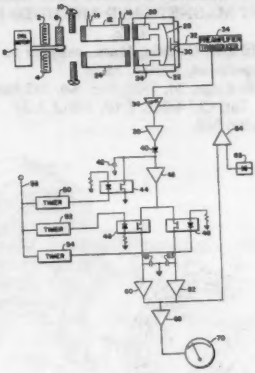
Glenn H. Fertig, Natrona Heights; Daniel R. Nardozzi, Gibsonia, and Richard N. Evanuik, Tarentum, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sep. 19, 1980, Ser. No. 188,982

Int. Cl.³ G01N 21/26

U.S. Cl. 250—343 7 Claims

1. An infrared analyzer of the type in which the radiation travels along two beam paths, one a sample beam path traversing a gas sample to be analyzed, the other a comparison beam path traversing a reference gas sample, wherein the presence of the component to be determined in the gas sample affects the relative intensity of the beams in a spectral region, the analyzer comprising a detector of the condenser microphone type responsive to changes in the beam intensity in the spectral region, means to cyclically modulate both beams such that in one portion of each cycle the sample beam is interrupted while the reference beam is not interrupted and in another but non-consecutive portion of each cycle the reference beam is interrupted while the sample beam is not, the non-consecutive cycle portions being separated by an intervening cycle portion in which both beams are simultaneously interrupted or simultaneously not interrupted, whereby the detector generates a series of alternate pulsed signals indicating the intensity of the reference beam and sample beam respectively, means to amplify the pulsed signals, means to store the peak value of the amplified comparison signal, feedback means responsive to the amplified comparison signal and controlling the magnitude of amplification to provide a predetermined peak amplitude of the comparison signal, and means to measure the difference between the peak comparison and the peak sample signal.



4,355,235

DEVICES FOR MEASURING PARAMETERS WHICH CAN MODIFY THE CHARGE OF AN ELECTRET

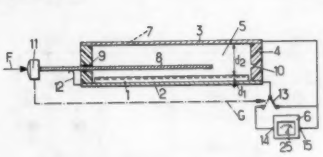
Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud; Gerard Dreyfus, Rue du Viaduc - Villebon s/Yvette, 91120 Palaiseau, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France

Filed Apr. 22, 1980, Ser. No. 142,737

Claims priority, application France, Apr. 23, 1979, 79 10225; Feb. 11, 1980, 80 02967; Feb. 11, 1980, 80 02968

Int. Cl.³ G01T 1/18

U.S. Cl. 250—376 28 Claims



1. Device for measuring a parameter capable of modifying the electrical charge borne by an electret, comprising, in addition to such an electret, two conductive electrodes framing this electret parallel to the latter, a separating part keeping one at least of these electrodes at a certain distance from the electret so as to preserve a chamber between them, means for enabling the parameter to be measured to exercise its influence in this chamber by modifying the charge of the electret, an electrical circuit for measuring the modifications of the electrical field

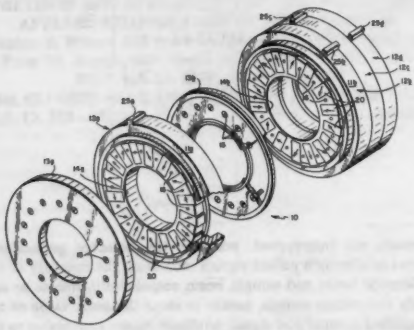
produced in the chamber, a conductive shutter and means for moving this shutter within the chamber parallel to itself and to the electrodes from a standby position to a measuring position and conversely, said device comprising in addition means for developing, on each movement of the shutter bringing it into its measuring position, information representing a difference between two electret charges, which difference is linked with the measurement to be carried out.

4,355,236

VARIABLE STRENGTH BEAM LINE MULTIPOLE PERMANENT MAGNETS AND METHODS FOR THEIR USE

Ronald F. Holsinger, Carlisle, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Apr. 24, 1980, Ser. No. 143,449
Int. Cl.³ G21K *1/08*; H01J *3/14*
U.S. Cl. 250—396 ML **46 Claims**



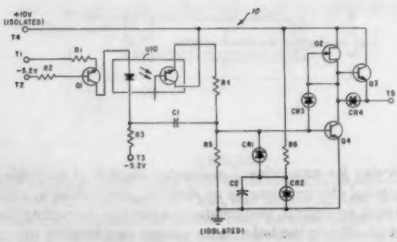
1. An adjustable strength multipole permanent magnet comprising a plurality of axial layers of magnetic material wherein one layer can be angularly displaced with respect to an adjacent layer, each of said axial layers comprising a plurality of segments comprising an oriented, anisotropic permanent magnet material arranged in a ring so that there is a substantially continuous ring of permanent magnet material, each segment having a predetermined easy axis orientation within a plane perpendicular to the axis of the magnet.

4,355,237

HIGH SPEED AC/DC COUPLER

William S. Harris, Jr., Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 4, 1980, Ser. No. 174,973
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **8 Claims**



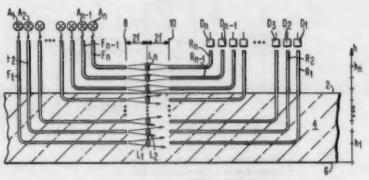
1. A high speed AC/DC coupler comprising:
(a) input circuit means for receiving an electrical input signal;
(b) optical coupler circuit means electrically connected to the input circuit means for receiving the electrical input signals;
(c) AC coupling circuit means electrically connected to receive the input signal; and
(d) receiver circuit means electrically connected to receive the signal from the AC coupling circuit means and the signal from the optical coupler circuit means to provide an output signal.

4,355,238

LIQUID LEVEL INDICATOR

Hartwig Ruell, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Siemens Corporation, Iselin, N.J.

Filed Feb. 20, 1981, Ser. No. 236,277
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—577 **10 Claims**



1. A liquid level indicator, comprising in combination:
(a) a plurality of first light transmitting fibers each having a first light input end for receiving light and each having a first light output end for delivering light transmitted therethrough, said first light output ends being arranged one above the other for being immersed into said liquid;
(b) a plurality of second light transmitting fibers each having a second light input end for receiving light and a second light output end for delivering light transmitted therethrough, said second light input ends being arranged one above the other for being immersed into said liquid, and each of said second light input ends being associated with one of said first light output ends for receiving light therefrom;
(c) optical lens means interposed between each first light output end and its associated second light input end for receiving light from said first light output end and focussing said light onto said associated second light input end when said optical lens means is not immersed into said liquid, said optical lens means having substantially the same index of refraction as said liquid, thereby losing its focussing effect when being immersed into said liquid; and
(d) a plurality of light detectors each associated with one of said second light output ends of said second light transmitting fibers for receiving light therefrom.

4,355,239

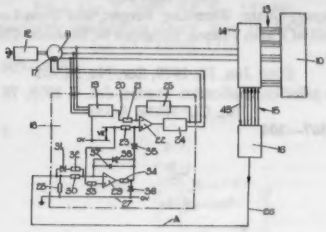
ELECTRICAL POWER SUPPLY ARRANGEMENT

David C. Williams, Kings Langley, and Peter A. Walsh, Hemel Hempstead, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Dec. 31, 1980, Ser. No. 221,537
Claims priority, application United Kingdom, Jan. 15, 1980, 8001255
Int. Cl.³ H02P *9/10*
U.S. Cl. 307—41 **5 Claims**

1. An electrical power supply arrangement comprising an electric generator having a field winding, means for regulating a voltage applied to said field winding, a plurality of switch means for sequentially controlling current supply from said

generator to respective ones of a plurality of external loads, means for causing said field voltage to be cyclically reduced,



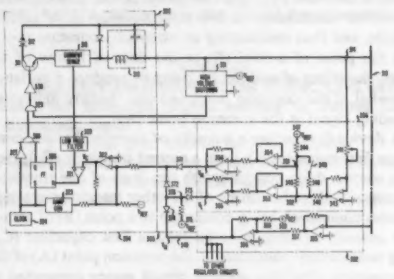
and means responsive to said cyclic reductions for causing operation of said switch means during said reduction.

4,355,240

AUXILIARY BACKUP REGULATOR CONTROL FOR PARALLELED CONVERTER CIRCUITS CONTROLLED BY A MASTER REGULATOR

Billy H. Hamilton, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 22, 1981, Ser. No. 276,052
Int. Cl.³ H02J 1/10; G05F 1/56
U.S. Cl. 307—44 **10 Claims**



1. A power supply system comprising;

a central regulation circuit which senses a bus voltage and supplies a first error voltage to a plurality of converters coupled to the bus,

at least one of the converters including an auxiliary regulation circuit which senses an output voltage of that converter and establishes an error voltage band including a high level and low level error voltage which establishes limits within which the first error voltage is operative,

switch control circuitry for pulse-width modulating a switching device in the first converter in response to an error voltage, and

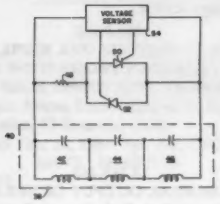
a signal selection circuitry interconnecting the central regulation circuit and the auxiliary regulation circuit to the switch control circuitry and operative for selectively applying one of said first, high and low error voltages to the switch control circuitry in response to relative magnitudes of the first, high and low error voltages.

4,355,241

MEANS FOR DAMPING SUBSYNCHRONOUS OSCILLATIONS IN AN AC POWER SYSTEM INCLUDING OVERLOAD PROTECTION

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 15, 1980, Ser. No. 178,622
Int. Cl.³ H02J 3/18; G05F 1/12
U.S. Cl. 307—102 **6 Claims**



1. Apparatus for damping subsynchronous oscillations in an AC power line comprising

reactance means serially connected in said power line,

circuit means connected in parallel with said reactance means and including a resistor and a serially connected, selectably bi-directional conduction means,

means for triggering said selectably bi-directional conduction means in response to half cycle time periods of current waves on said power lines exceeding a desired half-cycle time period, and

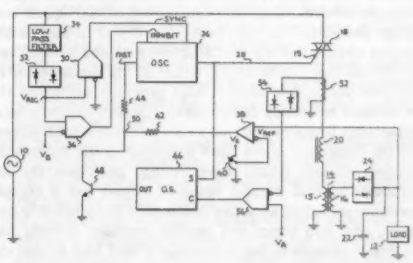
means for triggering said selectably bi-directional conduction means in response to voltage across said reactance means exceeding a pre-selected value.

4,355,242

VOLTAGE REGULATING SYSTEM

Georges R. E. Lezan; Marvin W. Smith, both of Roanoke, and Loren H. Walker, Salem, all of Va., assignors to General Electric Company, Salem, Va.

Filed Jun. 19, 1978, Ser. No. 917,137
Int. Cl.³ H03K 17/60
U.S. Cl. 307—252 N **12 Claims**



1. In a voltage control system, means for generating gating pulses operative to render conductive a triac to thereby control the electrical power supplied to a load from an a.c. voltage source comprising:

(a) an oscillator operable, to produce pulses effective to render said triac conductive, in first and second modes, said second mode being at a higher frequency of pulse occurrence than said first mode;

(b) means to generate a first signal indicative of the source voltage;

(c) means responsive to said first signal to apply a synchro-

nizing signal and additional means to apply a second signal indicative of the voltage across said load to said oscillator to initiate operation of said oscillator in said first mode;

(d) a feedback loop, connected to said oscillator, including means responsive to the first pulse produced in each half-cycle of said source voltage to generate a signal to place said oscillator in said second mode of operation; and,

(e) means responsive to said first signal operable to inhibit the production of said pulses when said source voltage has a magnitude less than a prescribed value in each half-cycle of said voltage source.

4,355,243
SINUSOIDAL OUTPUT GENERATOR

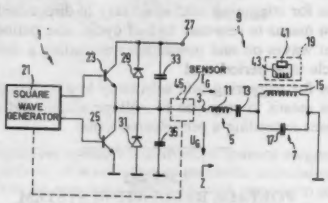
Rudy Tellert, Schweinfurt, Fed. Rep. of Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 2, 1980, Ser. No. 109,183

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901326

Int. Cl.³ H03K 5/08

U.S. Cl. 307—261 **2 Claims**



1. Sinusoidal output generator, comprising a parallel resonant circuit, a series resonant circuit, a square wave voltage generator, a load, said parallel resonant circuit being connected in series with said series resonant circuit and together forming a network coupled to the output of said square wave voltage generator, the load being coupleable to said parallel resonant circuit, the resonant frequency of said parallel resonant circuit being substantially equal to the fundamental frequency of said square wave voltage generator and lower than the resonant frequency of said series resonant circuit wherein the resonant frequency of said series resonant circuit is lower than the frequency of the third harmonic of the fundamental frequency of said square wave voltage generator, the load coupleable to said parallel resonant circuit has a complex impedance including an active component and a reactive component, and said series and parallel resonant circuits have parameters relative to the impedance of said load so that during load operation, a phase displacement of about 20°–40° occurs between the fundamental frequency component of the output current and the fundamental frequency of the output voltage of said square wave voltage generator, and said square wave voltage generator includes frequency control means responsive to one of the output voltage and the output current of said square wave voltage generator and the voltage at said parallel resonant circuit for controlling the power consumption of the load, said frequency control means including a current sensor stage responsive to the amplitude of the output current of said square wave voltage generator and arranged to be switched at a predetermind phase angle of the square wave voltage to generate an error signal.

4,355,244
DEVICE FOR READING A QUANTITY OF ELECTRIC CHARGES AND CHARGE-FILTER EQUIPPED WITH SAID DEVICE

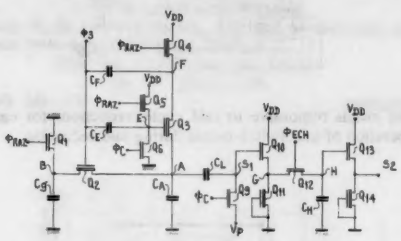
Roger Benoit-Gonin; Jean-Luc Berger, and Jean-Louis Coutures, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 28, 1979, Ser. No. 52,931

Claims priority, application France, Jul. 4, 1978, 78 19933

Int. Cl.³ H03K 3/353

U.S. Cl. 307—304 **11 Claims**



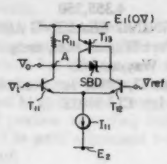
1. A device for reading a quantity of electric charges, comprising a first transistor (Q_2) and a second transistor (Q_3), each having source, drain and gate, said transistors being connected at a common point (A) with the drain of one transistor being connected to the source of the other transistor in series connection, said series being connected to a point (B) of arrival of the quantity of charges to be read, a first capacitor (C_A) having one terminal connected to the common point (A) of the two transistors (Q_2, Q_3), control circuit means connected to the gates of the two transistors (Q_2, Q_3) for charging the first capacitor (C_A) and for maintaining the first transistor (Q_2) in the saturating mode, and thus maintaining an essentially constant potential at the point of arrival (B) at the time of inflow of the charges, the effect of said inflow being to produce a variation in potential at the common point (A) and thereby delivering the reading signal at the common point (A).

2. A device for reading a quantity of electric charges, comprising a first transistor (Q_2) and a second transistor (Q_3), each having source, drain and gate with the drain of one transistor being connected to the source of the other transistor in series, said series connection being connected to a point (B) of arrival of the quantity of charges to be read, a first capacitor (C_A) having one terminal connected to the common point (A) of the two transistors (Q_2, Q_3), control circuit means connected to the gates of the two transistors (Q_2, Q_3) for charging the first capacitor (C_A) and for maintaining the first transistor (Q_2) in the saturating mode, and thus maintaining an essentially constant potential at the point of arrival (B) at the time of inflow of the charges, the effect of said inflow being to produce a variation in potential at the common point (A) and thereby delivering the reading signal at the common point (A); wherein the control circuit receives a first constant potential (V_{DD}) and comprises: a third transistor (Q_4) connected between said constant potential (V_{DD}) and a second terminal of the second transistor (Q_3); a fourth transistor (Q_5) and a fifth transistor (Q_6), said transistors being connected in series between the first constant potential (V_{DD}) and a reference potential of the device; a second capacitor (C_E) connected between the gate of the first transistor (Q_2) and a common point (E) of the fourth (Q_5) and fifth (Q_6) transistors, the gate of the second transistor (Q_3) being connected to said common point (E); a third capacitor (C_F) connected between the gate of the first transistor (Q_2) and a common point (F) of the second (Q_3) and third (Q_4) transistors.

4,355,245
ELECTRONIC CIRCUIT

Hideaki Isogai, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 7, 1980, Ser. No. 137,958
Claims priority, application Japan, Apr. 12, 1979, 54-44640
Int. Cl.³ H03K 3/33
U.S. Cl. 307—455 6 Claims

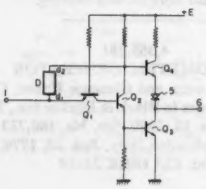


1. In an electronic circuit of a current switch construction in which the emitters of a first transistor and a second transistor are commonly connected to a constant-current supply, and a load resistor is connected to the collector of the first transistor thereby to provide an output from the collector, the improvement being a third transistor in which temporarily flows an electric current to a collector circuit of the first transistor when it is rendered non-conductive, said third inserted transistor being in a collector circuit of the second transistor, a load resistor being connected between the collector of said first transistor and a power supply, the base and emitter of said third transistor being connected between the collector of said second transistor and said power supply, the collector of said third transistor being connected to a connection point between the collector of said first transistor and said load resistor, an input voltage being applied to the base of said first transistor, a reference voltage being applied to the base of said second transistor, and an output being provided from the collector of said first transistor, a Schottky barrier diode being connected across the base and the collector of said third transistor.

4,355,246
TRANSISTOR-TRANSISTOR LOGIC CIRCUIT

Yuzo Usui, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 8, 1978, Ser. No. 967,635
Claims priority, application Japan, Dec. 9, 1977, 52-148617
Int. Cl.³ H03K 3/26, 3/01
U.S. Cl. 307—456 14 Claims

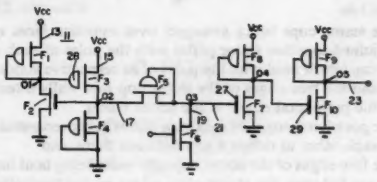


1. A three-state transistor-transistor logic circuit that is operable without a control input, said logic circuit comprising:
an input stage for inputting a signal to said TTL circuit,
a phase-split transistor stage connected to receive the output of said input stage,
a totem-pole-connected circuit including an off-buffer transistor connected serially with an inverter transistor, the bases of said off-buffer and inverter transistors being connected to respective points of said phase-split transistor stage,
a delay circuit having its output connected to the base of said off-buffer transistor and its input selectively connected to the input of said input stage or to a respective terminal of said phase-split transistor stage, said connection of said input and output of the delay circuit providing
a low level output of said TTL circuit when the input to said TTL circuit is at a high level
a high level output for a period equal to the delay time of said delay circuit, after said high level input returns to a low level input, and
an open state output of the TTL circuit at other times,
wherein said TTL circuit is operable without said control input to produce said three outputs.

4,355,247
SENSE AMPLIFIER AND METHOD FOR SMALL BIT LINE SWING WITH SHORT PROPAGATION DELAY FOR HIGH SPEED MOS MEMORIES

Melvin L. Marmet, Norco, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 11, 1980, Ser. No. 120,239
Int. Cl.³ H03K 5/18
U.S. Cl. 307—530 14 Claims



1. A sense amplifier for determining presence or absence of an addressed memory cell semiconductor which amplifier is independent of a reference tracking the midpoint of the small voltage bit line swing comprising in combination;
a constant low voltage variable current source for the bit lines;
a semiconductor pull-up device for said lines connected thereto;
said pull-up device and the memory cell semiconductor being in series and the pull-up device substantially matching the memory cell semiconductor in electrical resistance characteristics so the resistance ratio thereof determines the magnitude of the small voltage bit line swing;
an inverter amplifier having at least two series connected multi-terminal semiconductor devices;
one of said semiconductor devices having a high electrical resistance relative to the other, said one being connected to a junction between the series connected pull-up device and memory cell;
said pull-up device and said memory cell semiconductor, when present, comprising means for subtracting the bit line small voltage swing from said constant low voltage of the variable current source; and
said constant low voltage from the variable current source having a magnitude sufficient to trigger said one of said semiconductors into conduction but when diminished by the presence of a cell semiconductor said one semiconductor being biased into or toward non-conduction.

4,355,248
STEPPER MOTOR

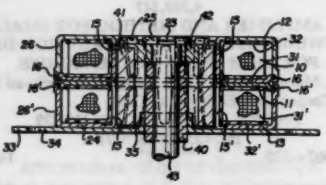
Harry G. Manson, Princeton, Ind., assignor to IMC Magnetics Corp., Jericho, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,657
Int. Cl.³ H02K 37/00
U.S. Cl. 310—42 7 Claims

1. A stepper motor comprising:
a pair of annular stator plates each having a central opening

and a plurality of poles surrounding the opening and projecting from one face of the plate, the stator plates being fixed to each other in back-to-back relation with their poles projecting in opposite directions,

a pair of annular stator cups each comprising a back wall having a central opening, a peripheral side wall projecting from one face of the back wall, and a plurality of poles surrounding the opening and projecting from the same face of the back wall as the side wall,



the stator cups being arranged over opposite faces of the joined-together stator plates with the poles of each stator cup interleaved with the poles of its respective stator plate and the free edges of the stator cup side walls fitted over the peripheral edges of the stator plates,

the peripheral edges of the stator plates being separated from each other to define a gap between them, and

the free edges of the stator cup side walls being bent into the gap between the stator plate edges to mechanically join each stator cup to its respective stator plate.

4,355,249

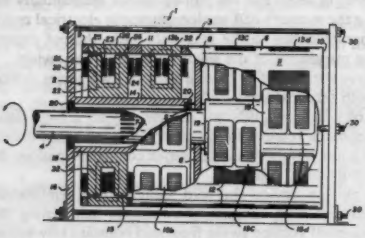
DIRECT CURRENT MOTOR HAVING OUTER ROTOR AND INNER STATOR

Rudolf F. Kenwell, 11143 - 50 Ave., Edmonton, Alberta, Canada (T6H 0J1)

Continuation-in-part of Ser. No. 955,984, Oct. 30, 1978, abandoned. This application Dec. 2, 1980, Ser. No. 212,148

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **8 Claims**



1. A direct current motor comprising:

a stationary stator assembly comprising

a plurality of stator rings, each such stator ring comprising a plurality of individual electromagnetic components circumferentially arranged on the stator ring, each such electromagnetic component comprising a pair of poles, the poles of each pair being axially aligned and outwardly facing, and energizing means for magnetizing and de-magnetizing said pair of poles, each stator ring pole having individual energizing means;

means for supporting said stator rings;

said stator rings being cylindrically arranged on said support means in angularly offset configuration; and

a rotatable rotor assembly mounted to rotate outside the stator assembly comprising a plurality of longitudinally oriented and cylindrically arranged magnetic elements positioned around the assembly of stator rings;

whereby said stator rings may be sequentially magnetized and de-magnetized to rotate said rotor assembly, the energizing time for each stator ring may be varied, and the number of electromagnetic components energized in each stator ring may be varied.

4,355,250

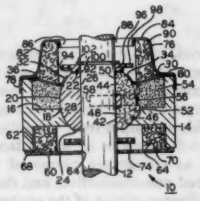
SELF-ALIGNING BEARING ASSEMBLY

Robert S. Langdon, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 17, 1980, Ser. No. 169,824

Int. Cl.³ H02K *5/16*

U.S. Cl. 310—88 **5 Claims**



1. A bearing assembly for journaling a rotatable shaft of a dynamoelectric machine comprising a self-aligning bearing having a bore therethrough adapted to rotatably journal the shaft therein; a pair of opposite partial spherical outer surfaces of like configuration on said bearing; a housing surrounding and generally radially spaced from said bearing; a plurality of angularly spaced-apart and generally radially extending arms integral with said housing and having partial spherical end surfaces thereon arranged in conforming contact with one of said opposite partial spherical outer surfaces of said bearing, respectively; spring means for urging said one opposite partial spherical outer surface on said bearing into the conforming contact with said partial spherical end surfaces on said arms, said spring means including means for biased engagement with said housing, and means for conforming contacting engagement with the other of said opposite partial spherical outer surfaces on said bearing so as to effect free self-alignment of said one opposite partial spherical outer surface of said bearing on said partial spherical end surfaces of said arms; and means disposed in said housing and said bearing for supplying a lubricant to the shaft in said bore of said bearing.

4,355,251

TACHOMETRIC GENERATOR

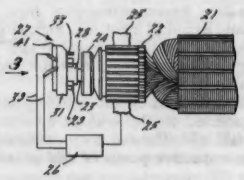
Lorenzo E. Alessio, Lecco, and Giuseppe Cuneo, Calolziocorte, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 18, 1980, Ser. No. 160,733

Claims priority, application Italy, Jun. 28, 1979, 23953 A/79

Int. Cl.³ H02K *21/38*

U.S. Cl. 310—155 **7 Claims**



1. A portable power tool, comprising:

an electric motor having a rotatable armature shaft extending axially;
speed control means for adjusting the speed of said motor;
a tachometric generator for supplying an electrical signal to said speed control means indicative of the actual rotational speed of said motor, and comprising a toothed rotor with radially outwardly extending teeth and a sensor;
said rotor being of magnetically permeable material and being mounted on one end of said armature shaft for rotation therewith;
said sensor having a single magnet, a core member having a first end portion, an intermediate portion, and a second end portion which has said magnet mounted thereon, and a coil disposed about said intermediate portion and electrically connected to said speed control means;
said second end portion extending radially outwardly and being disposed in axial alignment with said teeth during rotation thereof;
said magnet having axially aligned poles and being directly interposed between said rotor and said second end portion at a first location in close proximity to said teeth during rotation thereof;
said first end portion extending in an axial direction relative to said armature shaft and being disposed radially outwardly and adjacent the teeth of said toothed rotor at a second location spaced from said first location; and
said entire sensor being encased in a protective covering of plastic except for the pole of said magnet adjacent said teeth and said first end portion;
whereby a series magnetic circuit is formed comprising said toothed rotor, said core member and said magnet, and said coil is responsive to changes in the intensity of flux passing through said magnetic circuit as said rotor rotates, said tachometric generator being compact and exhibiting a high signal to noise ratio.

4,355,252

SYNCHRONOUS MOTOR

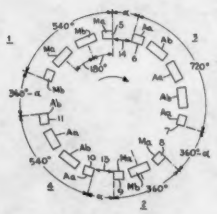
Hubert Lechner, Cham, and Benedikt Steinle, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed May 27, 1980, Ser. No. 153,693

Claims priority, application Switzerland, May 30, 1979, 5030/79

Int. Cl.³ H02K *19/00*

U.S. Cl. 310—162 **6 Claims**



1. In a self-starting unidirectional synchronous motor including a stator, an exciting coil being at least partly disposed within said stator, a permanent magnet rotor having a plurality of rotor poles being at least partly disposed within said coil, a space being defined between said rotor and said coil, said stator including a plurality of poles, said poles including groups of unshaded main poles and groups of shaded auxiliary poles alternating with each other, respective end zones being defined between adjacent groups, each pole generating a corresponding magnetic field,
said poles comprising pole arms extending into said space and including one half pole in each of said groups disposed at said end zones, respectively, and
wherein groups of shaded poles are displaced with respect to groups of non-shaded poles by respective substantially equal spatial electrical angles, and the magnetic fields of groups of shaded poles are shifted with respect to the magnetic fields of groups of non-shaded poles by respective substantially equal phase angles.

4,355,253

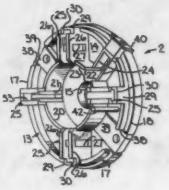
COMBINATION END BELL AND BRUSH HOLDER FOR A DYNAMOELECTRIC MACHINE

Kenneth A. Vollbrecht, Milwaukee, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Feb. 27, 1981, Ser. No. 238,827

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **16 Claims**

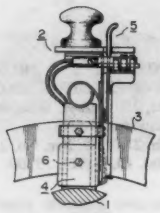


1. A one-piece end bell and brush holder for a dynamoelectric machine having a rotor with a shaft and a drum-like commutator secured to the shaft, comprising:
an annular cup-shaped cap member molded of electrical insulating material that includes a central axis with a base extending radially therefrom and a central opening formed therethrough at said axis for receiving the shaft of said machine, and a circumferential outer wall extending axially from one side of said base to be concentric with said central opening,
said cap member having circumferentially spaced apart radially elongated mounting boxes for slidably confining the brushes of said machine disposed on said one side of said base, each brush mounting box being open at axially opposite ends, said axial opening extending through the base of said cap member to expose at least a portion of the bottom face of a brush directly to the atmosphere, and includes,
a pair of opposing, spaced apart side walls extending radially along said one side of said base and extending axially therefrom to contain a brush against circumferential displacement,
an end wall extending between the radially outer ends of said side walls,
a flange on the axially outer edge of at least one of said side walls projecting circumferentially to partially enclose the axial opening along the top of said brush mounting box and to form a radially extending slot, said flange containing said brush against axial movement in one direction, and
a stop member located between said side walls which defines the axial opening in the bottom of said brush mounting box, said stop member in contacting engagement with said brush to contain said brush against axial movement in the other direction, whereby the side walls, flange and stop member of each box cooperate to provide guide ways opening radially inwardly in which the brushes of said machine are lengthwise and slidably received.

4,355,254
BRUSH HOLDING DEVICE FOR ELECTRIC ROTARY MACHINE

Norihiro Oki, Katsuta; Shoji Motegi, Hitachi; Yasuyuki Wachi, Takahagi; Yoshio Takikawa, Hitachi, and Norio Yamakawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 4, 1980, Ser. No. 204,047
Claims priority, application Japan, Nov. 9, 1979, 54-145703
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—242 7 Claims



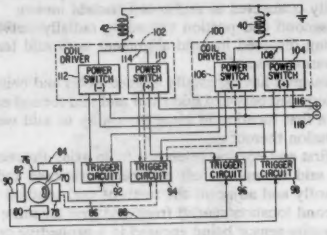
1. A brush holding device for an electric rotary machine comprising a brush disposed to make sliding contact with the peripheral surface of a rotatable slip ring and having a pig tail extending from a portion thereof, and a brush holder releasably holding said brush while pressing said brush against the peripheral surface of said slip ring at a predetermined pressure, so that said brush can be removed from or installed in said brush holder at least during operation of the electric rotary machine, wherein said brush holder comprises a brush holding mechanism secured to a stationary part of the electric rotary machine and a brush replacement unit adapted to be locked to or unlocked from said brush holding mechanism together with said brush, said brush holding mechanism comprising a brush box secured to said stationary part for accommodating said brush therein so as to prevent the brush from being laterally displaced during operation of the rotary machine, a main post extending from a portion of said brush box, and an aperture formed in a portion of said main post to be engageable with a portion of said brush replacement unit, said brush replacement unit comprising a main wall, a brush spring anchored at one end thereof to a lower portion of said main wall, an insulated handle fixed to a top portion of said main wall, a resilient manipulating lever fixed at one end thereof to a portion of said main wall and protruding to terminate at the other end thereof on the same side as said handle, a latching member forming an integral part of said manipulating lever and having a finger engageable with said aperture of said main post in said brush holding mechanism, a brush locking element mounted on a lower portion of said main wall for engaging with said brush and locking said brush in position, and a brush retaining element in the form of a band loop supported on a portion of said main wall to loosely embrace a body portion of said brush, the brush retaining element being disposed on the main wall at a position such that the brush retaining element is located above an upper end of the brush box when the brush replacement unit is installed in the brush holding mechanism.

4,355,255
BRUSHLESS DIRECT CURRENT MOTOR AND CONTROL THEREFOR

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 28, 1979, Ser. No. 70,293
Int. Cl.³ H02K *29/00*
U.S. Cl. 310—254 7 Claims

1. A brushless direct current motor comprising:
a housing;
a winding frame member of nonmagnetic material fixedly mounted inside said housing;
at least two coils of wire wound on said winding frame member, each of said coils being substantially planar with the planes defined by the coils being equiangularly spaced;
a permanent magnet rotor mounted for rotation about an axis within said winding frame member, said axis being parallel to all of said coil planes and said permanent magnet rotor being magnetized in a direction orthogonal to said axis;
position sensing means responsive to the angular orientation of said rotor about said axis for providing a plurality of

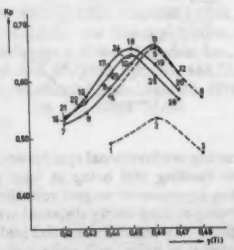


sequentially occurring position signals, said position sensing means including a plurality of angularly spaced switching devices which are sequentially switched in a nonoverlapping manner to provide said sequentially occurring position signals so that at any given time one and only one of said switching devices is providing a respective position signal;
a source of bidirectional direct current; and
coil energizing means responsive to said sequentially occurring position signals for selectively directing said bidirectional direct current simultaneously through all of said coils.

4,355,256
CERAMIC COMPOSITION FOR A PIEZOELECTRIC BODY AND ELECTROMECHANICAL TRANSDUCER

David J. Perduijn, and Jacobus Verberkt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,784
Claims priority, application Netherlands, May 21, 1979, 7903964
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—358 2 Claims



1. A piezoelectric body for an electromechanical transducer corresponding to the ternary system lead titanate-lead zirconate-$Pb(M_{1/3}^{II}M_{2/3}^{V})O_3$, characterized in that said piezoelectric body consists of $Pb_{1-a}M_a(Mg_{(1-b)/3}Mn_{b/3}Sb_{2/3})_x Ti_yZr_zO_3$ wherein M is one or more of the alkaline earth metals Ca, Sr and Ba and wherein,

$0 \leq a \leq 0.15$,

$0 \leq b \leq 0.20$,

$0.01 \leq x \leq 0.25$,

$0.40 \leq y \leq 0.55$,

$0.20 \leq z \leq 0.59$

and

$(x+y+z)=1$.

4,355,257

THICKNESS SHEAR TYPE PIEZOELECTRIC VIBRATOR WITH INTEGRAL MOUNTING

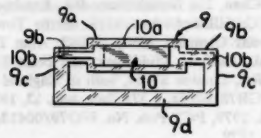
Hirofumi Kawashima; Akira Watanabe, and Yasunori Ebihara, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Continuation-in-part of Ser. No. 930,241, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 763,713, Jan. 28, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 168,133

Claims priority, application Japan, Feb. 29, 1976, 51/8636

Int. Cl.[3] H01L *41/08*

U.S. Cl. 310—361 10 Claims



1. A thickness shear type quartz crystal vibrator comprising a thin quartz plate of uniform thickness cut from the Y-plate rotated through an angle of 30° to 40° about the X-axis and shaped by etching to form a rectangular vibrating portion elongated along the X-axis and of uniform thickness throughout its width and length, and integral rectangular supporting portions extending respectively from opposite ends of said rectangular vibrating portion and of uniform width throughout their length, said vibrating portion and integral supporting portions being of the same uniform thickness, and the width of said supporting portions of said quartz plate being between one quarter and three quarters the width of said vibrating portion, and electrodes of conducting material having elongated rectangular active portions on the obverse and reverse surfaces of the vibrating portion of said plate respectively, the electrode on the obverse surface of said plate having an integral lead portion extending along the obverse surface of one only of said supporting portions and the electrode on the reverse surface of said plate having an integral lead portion extending along the reverse surface of the other body of said supporting portions, whereby an electric field is applied by said electrodes only to said vibrating portion of said plate and is not applied at all to said supporting portions.

4,355,258

PHOTOMULTIPLIER TUBE HAVING A STRESS ISOLATION CAGE ASSEMBLY

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,906

Int. Cl.[3] H01J *40/04, 40/02*

U.S. Cl. 313—95 6 Claims

1. In a photomultiplier tube having an evacuated envelope; a photomissive cathode within said envelope,

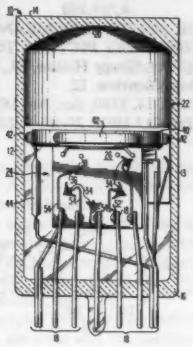
a cage assembly adjacent to said cathode, said cage assembly comprising;

i. an anode including at least one support rod,

ii. a plurality of closely spaced dynodes disposed between said cathode and said anode, each of said dynodes having a pair of dynode tabs formed in the end thereof,

iii. a pair of dynode support spacers having a plurality of electrode support apertures formed therethrough, said dynode tabs and said anode support rod extending through said electrode support apertures, and

a stem closing one end of said envelope, said stem including



a plurality of relatively stiff cage assembly support leads extending therethrough, the improvement comprising;

said dynode support spacers having a plurality of stress isolation apertures therethrough,

a plurality of deformable stress isolation eyelets, each of said eyelets being disposed within a different one of said stress isolation apertures,

means for flexibly interconnecting a different one of each of said eyelets to one end of each of said dynodes and to one end of said anode support rod, and

means for attaching a different one of said cage assembly support leads to each of said eyelets.

4,355,259

HEATER FOR AN INDIRECTLY HEATED CATHODE

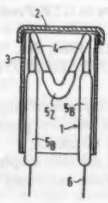
Eberhard Weiss, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 17, 1980, Ser. No. 187,865

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938248

Int. Cl.[3] H01J *1/20*

U.S. Cl. 313—337 8 Claims



1. Heater for an indirectly heated cathode wherein a heating coil covered with an insulating coating is positioned within a cathode sleeve closed with a cap having an emitting coating thereon, one portion of the heating coil being adjacent to the cap, and the other being distant from the cap,

characterized in that that portion (4) of the heating coil (6) which is adjacent to the cap (2) has a lower heat radiating

capacity per unit length of the heating coil than the distant portion (5_Z, 5_B).

2. A heater for an indirectly heated cathode wherein a heating coil covered with an insulating coating is positioned within a cathode sleeve closed with a cap having an emitting coating thereon, one portion of the heating coil being adjacent to the cap, and the other being distant from the cap,

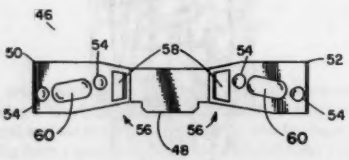
characterized in that in the portion (9) adjacent to the cap (2), the heating coil (1) has a smaller pitch than in the distant portion (8_Z, 8_B).

4,355,260

SHADOW MASK SUSPENSION MEANS FOR COLOR CATHODE RAY PICTURE TUBES

Lawrence W. Dougherty, Sleepy Hollow, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 14, 1980, Ser. No. 167,990
Int. Cl.³ H01J *29/07, 9/18*
U.S. Cl. 313—404 **7 Claims**



3. In a color cathode ray picture tube having a rectangular face panel and a substantially frameless relatively thin and torsionally flexible metallic shadow mask mounted in precise adjacency to said panel by corner-mounted suspension means, each suspension means including a relatively thick and inflexible metallic bracket having a planar central section and a pair of arms for the embracing of and attachment to an associated corner of said mask, said bracket further including at least two spaced-apart welding projections on each arm, said bracket being characterized by having a substantially rectangular perforated region in each arm adjacent to said central section which provides a reduction in cross-sectional area for increasing electrical resistance of said regions, such that when electrical current is routed through said bracket, the magnitude of said current and the reduction in cross-sectional area in said regions is effective to selectively resistively heat said regions to a plastic state, whereby said bracket can be conformed to the desired contour of said mask without spring-back and without deforming said mask.

4,355,261

DISCHARGE LAMP WITH INTEGRAL STARTER

Sheppard Cohen, Danvers, and Nikolaos Barakitis, Haverhill, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,875
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—47 **11 Claims**

1. An arc discharge lamp comprising:

an hermetically sealed bulbous glass envelope having first and second external terminals;

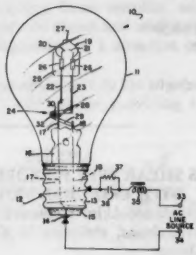
an hermetically sealed arc tube disposed within said bulbous envelope, said arc tube enclosing a pair of spaced apart electrodes;

first substantially rigid conductor means within said bulbous envelope for electrically connecting one of said arc tube electrodes to said first external terminal;

second conductor means within said bulbous envelope electrically connected to the other of said arc tube electrodes;

third conductor means within said bulbous envelope spaced apart from said second conductor means and electrically connected to said second external terminal;

a glow starter means within said bulbous envelope comprising a first bimetal connected at one end to said second conductor means, a second bimetal connected at one end to said third conductor means, and a fixed first contact means disposed on said first conductor means, said bimetals being electrically connected together at the other end which makes a normally closed contact with said fixed contact in the quiescent state of said starter means; and



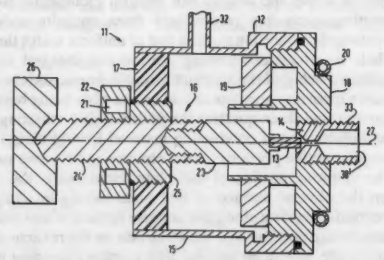
an inert gas within said bulbous envelope at subatmospheric pressure.

4,355,262

ELECTRIC ARC APPARATUS

Anthony K. F. Chan, 22a Brondesbury Rd., London NW6, England; John C. Hilliard, Apt. 1119 Metro Towers, 26450 Crocker, Mount Clemens, Mich. 48043; Alan R. Jones, 4 Fairholme Rd., Ashford, Middlesex, and Felix J. Weinberg, 59 Vicarage Rd., London SW14, both of England

PCT No. PCT/GB78/00054, § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 13, 1979, PCT Pub. No. WO79/00413, PCT Pub. Date Jul. 12, 1979
PCT Filed Dec. 19, 1978, Ser. No. 154,394
Claims priority, application United Kingdom, Dec. 20, 1977, 52925/77; Sep. 28, 1978, 38578/78
Int. Cl.³ H01J *17/26*
U.S. Cl. 315—111.11 **57 Claims**



1. Apparatus for treating a flow of material by an electric arc comprising:

a cathode and an anode arranged for striking an arc across a gap between the cathode and the anode and arranged to provide a pathway for flow of material through the gap between the cathode and the anode,

means for producing movement of the arc around the anode-cathode gap, and

adjustment means for selectively increasing and decreasing the distance across the anode-cathode gap by rearward and forward axial movement of the cathode for fine control of the internal energy imparted to material passing through the anode-cathode gap,

the cathode being a substantially non-consumable cathode having an edge at an end thereof opposite the anode for

providing a continuous closed path for the cathode root to travel around in operation,

the anode having an inwardly tapering frusto-conical surface arranged opposite the said edge on the cathode in a position such as to provide on the frusto-conical surface a continuous closed path for the anode spot to travel around in operation,

the distance across the anode-cathode gap being sufficiently small for the arc channel to be substantially straight between the cathode root and anode spot in normal operation during the said movement of the arc around the gap, and the angles of inclination of the surfaces forming the said edge on the cathode being such relative to each other and relative to the frusto-conical surface of the anode as to prevent the cathode root wandering from the edge along which it is intended to travel during the said movement of the arc around the anode-cathode gap,

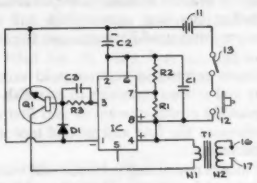
the arrangement being such that the anode spot and cathode root travel around their respective paths in the same sense and in substantially the same time with the arc free from uncontrolled changes in arc length during travel of the anode spot and cathode root around the said respective paths.

4,355,263

IGNITION CIRCUIT FOR EXPLOSIVE DEVICES AND THE LIKE

Harold Buhrlen, Flintridge, Calif., assignor to James E. Meagher, La Canada, Calif.

Filed May 15, 1981, Ser. No. 263,916
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—209 T **5 Claims**



1. In an ignition circuit for an explosive or the like for producing an electric spark between spaced electrodes, the combination of:

a step-up transformer having a primary winding and a secondary winding on a ferrite core;

means for directly connecting said secondary winding to said spaced electrodes;

a transistor having a base and emitter and collector electrodes;

a battery having positive and negative terminals;

an on-off switch;

circuit means connecting said transistor electrodes, primary winding and switch in series with said battery;

an integrated circuit free running multi-vibrator having a first control voltage and reset input, a second trigger and threshold input, a circuit ground, a third discharge input, and an output, with said switch connecting said first input to one terminal of said battery and with said circuit ground connected to the other terminal of said battery;

a first capacitor connected between said other terminal of said battery and said second input;

first and second resistors connected in series between said first and second inputs, with said first and second resistors interconnected at said third input; and

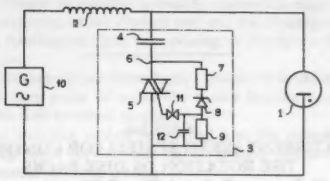
a third resistor connected between said output and said transistor base.

4,355,264

STARTER CIRCUIT FOR DISCHARGE LAMP

Gian F. Merli, Saint Gratien, France, assignor to Claude, S.A., Boulogne-Billancourt, France

Filed Feb. 9, 1981, Ser. No. 232,609
Claims priority, application France, Oct. 30, 1980, 80 23210
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—289 **1 Claim**



1. A starter circuit for a high power discharge lamp connected to an AC source via an inductor, the starter circuit comprising, in combination:

a capacitor series connected with a triac across said lamp;

a branch including a first resistor connected in series with a zener diode and a second resistor between the junction point of said capacitor and triac and one of the outputs of the AC source; and,

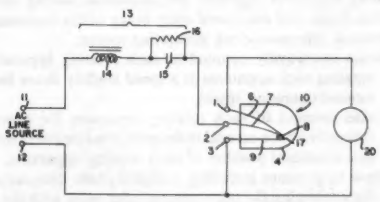
a driving circuit for said triac including a diac connected between the triac and the junction point of said second resistor and zener diode.

4,355,265

DISCHARGE LAMP STARTING AND OPERATING CIRCUIT

Sheppard Cohen, Danvers; Nikolaos Barakitis, Haverhill, and Alexander T. Zack, Danvers, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,876
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—290 **12 Claims**



1. A lamp starting and operating circuit comprising, in combination:

first and second input terminals for connection to a source of AC line voltage;

a glow starter device having a first terminal connected to a first bimetal, a second terminal connected to a second bimetal, and a third terminal connected to a rigid conductive member, said bimetals being electrically connected together at one end which makes a normally closed contact with said rigid member in the quiescent state of said device;

an inductive means and a capacitive means series connected in that order between said first AC input terminal and the second terminal of said starter device;

means connecting said second AC input terminal to the third terminal of said starter device; and

means for connecting the first and third terminals of said starter device across the terminals of a discharge lamp, whereby upon initial energization of said circuit, short

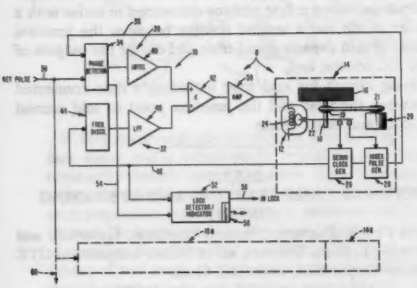
circuit current through the second and third terminals of said starter device is operative to flex said second bimetal for separating said bimetals from said rigid member to provide an open circuit thereat and produce a high voltage pulse switching transient across the lamp, and upon starting of said lamp, the lamp current flow through the first and second terminals of said starter device is operative to maintain said bimetals separated from said rigid member.

4,355,266

EDDY CURRENT SERVO SYSTEM FOR CONTROLLING THE ROTATION OF DISK PACKS

Willard C. Pearson, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jul. 31, 1980, Ser. No. 174,042
Int. Cl.³ H02P 7/74
U.S. Cl. 318—85 2 Claims



1. A servo system for locking the rotation of at least two rotating apparatus together, the apparatus having an eddy current brake and associated eddy brake coil, comprising;

external reference clock generating means;

means operatively coupled to each rotating apparatus for rotating each apparatus at a speed slightly faster than the desired operating speed;

means coupled to each rotating apparatus for generating respective once-around index pulses indicative of an absolute rotational position of each rotating apparatus;

phase loop means including, a digital phase detector means for comparing the once-around index pulse with the external reference clock, and an integrator coupled to the phase detector means for generating a phase loop error signal indicative of any rotational positonal error between the apparatus in response to comparison of the once-around index pulses and the external reference clock;

means coupled to the rotating apparatus for generating a servo clock indicative of the speed of rotation thereof;

velocity loop means including a digital frequency to voltage converter and filter means for generating a velocity loop error signal proportional to the servo lock frequency and thus to the speed of rotation in response to the servo clock;

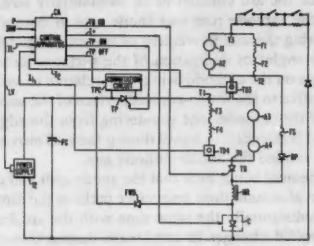
summing amplifier means coupled to the integrator and to the filter means to sum the error signals from the loops and to supply a continuous servo control current to each eddy brake coil to continuously brake the speed of the rotating apparatus to lock each of the absolute rotational positions to the external reference clock and thus to each other while maintaining the desired operating speed.

4,355,267

PROPULSION MOTOR CONTROL APPARATUS

James H. Franz, Jr., Murrysville, and Stanley W. Jones, McMurray, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1981, Ser. No. 258,509
Int. Cl.³ H02P 5/46
U.S. Cl. 318—89 7 Claims



1. In control apparatus for a plurality of direct current motors operative with a voltage source and responsive to an effort request signal for determining one of a power mode of operation and a brake mode of operation for said motors, with each of said motors having an armature and a field, the combination of

circuit means having first and second terminals and a first circuit including the armature and field of a first motor and a second circuit including the armature and the field of a second motor connected between said first and second terminals, with said circuit means having third and fourth terminals and a third circuit including the first motor armature and the second motor field and a fourth circuit including the first motor field and the second motor armature connected between said third and fourth terminals,

first switch means connected between said voltage source and said first and second terminals to establish said power mode and provide power current in said first and second circuits to energize the first and second motor armatures in a first direction,

second switch means connected between said voltage source and said third and fourth terminals to establish the brake mode and provide brake current in said third and fourth circuits to energize the first and second motor armatures in a second direction,

first current sensing means connected with said circuit means to provide a first output signal in accordance with the power current in said first and second circuits and the brake current in said third and fourth circuits, and

second current sensing means connected with said circuit means to provide a second output signal in accordance with the power current in said second circuit and the brake current in said third circuit.

4,355,268

MOTOR CONTROL APPARATUS

Teruo Iwasawa, Mitaka, and Hitomi Tojiki, Hachioji, both of Japan, assignors to Mobil Oil Corporation, New York, N.Y.

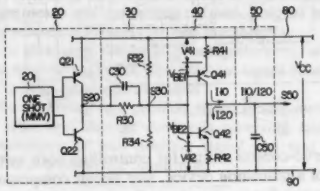
Filed Dec. 29, 1980, Ser. No. 220,364
Claims priority, application Japan, Feb. 20, 1980, 55-20050
Int. Cl.³ H02P 5/16
U.S. Cl. 318—314 8 Claims

1. A motor control apparatus comprising:

(a) first means for producing a first signal having a period corresponding to the rotational speed of a motor;

(b) second means for producing a second signal inverted to a first level in response to said first signal and subsequently inverted to a second level after the lapse of a predetermined period of time;

(c) third means for producing a third signal obtained through a phase advance type phase compensation for said second signal, said third means including a first compensation resistor provided between a point to which said second signal is applied and a point from which said third signal is derived, a capacitor connected in parallel with said first compensation resistor, and a second compensation resistor provided between said third signal supply end of said first compensation resistor and a fixed reference potential circuit for signal frequencies;



(d) fourth means for supplying and receiving a first current signal and a second current signal in accordance with the level of said third signal;

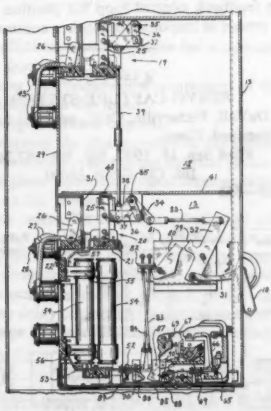
(e) fifth means for producing an output signal obtained through the integration of said first and second current signals; and

(f) sixth means for driving said motor in accordance with the level of said output signal.

4,355,269
MOTOR HEATING CONTROL WITH INTERLOCKED DUAL ISOLATING SWITCHES

Lawrence A. Burton, Oconomowoc; David T. Rollay, Franklin, and Walter J. Lukitsch, New Berlin, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 23, 1981, Ser. No. 285,962
Int. Cl.³ H02P 7/00
U.S. Cl. 318—436 6 Claims



1. A motor heating control for connection to a source of electrical current and to an electrical motor, the control comprising:

an enclosure having a door and an operating handle that is movable between a closed position and an open position to allow opening of the door for access to the interior of the enclosure;

first terminal means supported by the enclosure for connection to the power source;

second terminal means supported by the enclosure for connection to the electrical motor;

a plurality of current conducting paths formed within the enclosure, to conduct electrical current between the first terminal means and the second terminal means;

a motor heating contactor disposed within the enclosure, the motor heating contactor having a control coil and having a set of motor heating contacts electrically connected in the current conducting paths, the motor heating contacts being closed to conduct a heating current in response to the energizing of the control coil and the heating current being interrupted upon the opening of the motor heating contacts;

a first isolating switch electrically connected in the current conducting paths between the motor heating contactor and the first terminal means;

a second isolating switch connected into the current conducting paths between the motor heating contactor and the second terminal means;

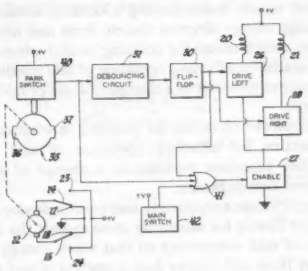
a first interlock mechanism which connects both of the isolating switches to the enclosure operating handle and which is operable to open the two isolating switches when the handle is moved to its open position; and

a second interlock mechanism coupled to the motor heating contactor and cooperable with the first interlock mechanism in response to the closing of the motor heating contacts to prevent movement of the operating handle until the motor heating contacts are opened.

4,355,270
MOTOR REVERSING CIRCUIT FOR VEHICLE WINDSHIELD WIPER

Keith R. Cook, Xenia; John E. Pozenel, Miamisburg, and Donald E. Graham, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1981, Ser. No. 326,801
Int. Cl.³ H02P 1/04
U.S. Cl. 318—443 5 Claims



1. Windshield wiper drive apparatus for a motor vehicle comprising, in combination:

first means effective, when activated, to drive a windshield wiper across a motor vehicle window selectively toward or away from a predetermined park position;

cam means driven by said first means with the windshield wiper, said cam means having a first lobe defining said park position and a second lobe defining, with said first lobe, a wipe angle for said wiper;

a park switch adapted for actuation by said cam lobes;

second means responsive to each successive actuation of the park switch to reverse the drive direction of said first means, said second means being effective to generate a park signal when the drive direction is reversed away from the park position;

main switch means effective, while activated, to activate said first means; and

third means effective, when the main switch means is deactivated, to continue activation of the first means only until

the next simultaneous concurrence of an actuation of the park switch and the existence of the park signal,

whereby the wiper is oscillated through the predetermined angle while the main switch means is activated and then automatically returned to the park position.

4,355,271

CONTROL APPARATUS

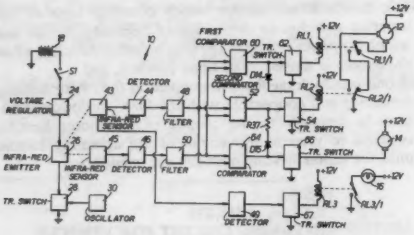
Raymond J. Noack, 10 Nicholls Pl., Higgins, Australian Capital Territory, Australia

Continuation-in-part of Ser. No. 78,624, Sep. 25, 1979, abandoned. This application Jan. 16, 1980, Ser. No. 112,510

Claims priority, application Australia, Sep. 25, 1978, PD6090; Oct. 3, 1978, PD6177

Int. Cl.³ G05B *5/00*; A47L *1/00*

U.S. Cl. 318—480 **28 Claims**



1. A control apparatus for a vehicle having a windscreen, windscreen wiper apparatus and windscreen washer apparatus; said control apparatus comprising:

(a) emitter means having an emitter device for generating energy and directing the generated energy away therefrom;

(b) first sensor means having a control sensor device for sensing energy directed thereto from said emitter means;

(c) first switch means for coupling to said windscreen wiper apparatus for effecting operation of said windscreen wiper apparatus pursuant to a change of stage of said first switch means;

(d) second switch means for coupling to windscreen washer apparatus for effecting operation of said windscreen washer apparatus pursuant to a change of state of said second switch means;

(e) support means supporting said emitter device and control sensor device for mounting these against the interior surface of said windscreen so that when energy is directed away from said emitter device portion of said energy may be reflected back to said control sensor device; said sensor means being responsive to the magnitude of said portion of said energy reflected back to said control sensor device to cause a first alteration of electrical condition of the sensor means when there is water on an outer surface of said windscreen opposite said interior surface and to cause a second alteration of said electrical condition when there is dust on said outer surface; and

(f) switch control means coupled to said sensor means and to said first and second switch means and being responsive to effect said change of state of said first switch means pursuant to occurrence of said first alteration of electrical condition of said sensor means for effecting said operation of said windscreen wiper apparatus, and said switch control means being responsive to effect said changes of state of both said first switch means and said second switch means pursuant to occurrence of said second alteration of said electrical condition of said sensor means, for effecting said operation of both said windscreen wiper apparatus and said windscreen washer apparatus.

4,355,272

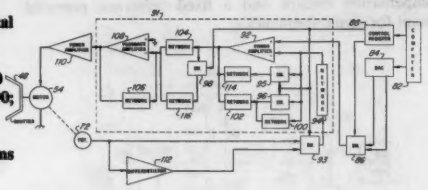
SHUTTER MECHANISM

Lawrence A. Wise, Sunnyvale, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Filed Oct. 9, 1979, Ser. No. 82,485

Int. Cl.³ G05B *5/01*

U.S. Cl. 318—561 **12 Claims**



1. A servo-control circuit for controlling both velocity and position of a utilization device, said circuit comprising:

drive means for moving the utilization device;

a reference source of velocity and position reference information indicative of the desired velocity and position of the utilization device;

a feedback source of velocity and position feedback information indicative of the actual velocity and position of the utilization device;

a feedback control loop coupled to the drive means and to the reference and feedback sources, said feedback control loop having a topology configurable for velocity control of the drive means to control the velocity of the utilization device in accordance with velocity reference and feedback information from the reference and feedback sources and differently configurable for position control of the drive means to control the position of the utilization device in accordance with position reference and feedback information from the reference and feedback sources; and

control means, coupled to the feedback control loop, for configuring the topology of the feedback control loop for velocity control of the drive means in response to a command signal and for differently configuring the topology of the feedback control loop for position control of the drive means in response to another command signal.

4,355,273

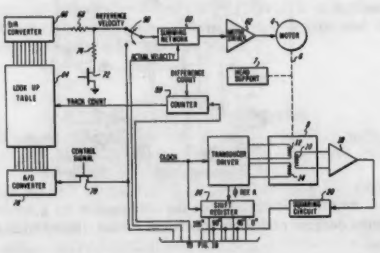
SERVO CAPTURE SYSTEM

Wilbur E. DuVall, Victorville, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1980, Ser. No. 187,264

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **3 Claims**



1. A closed loop servo system for moving a member past a plurality of positions to a desired position, comprising:

counting means for supplying a count signal indicative of the number of positions which said member must pass to reach said desired position;

first means for generating a first signal indicative of the position of said member;

a motor drive;

a storage device;

means for supplying said count signal to said storage device;

means for supplying a digital representation of said position signal to said storage device only when said count signeal is zero;

said storage means outputting a digital signal indicative of the reference velocity of said member in response to either input thereto:

a digital to analog converter coupled to the output of said storage means and outputting an analog signal indicative of the reference velocity of said member;

means for changing the scale of said converter when said digital representation of said position signal is being supplied to said storage device; and

means for supplying said position signal to said motor drive only after said storage device is receiving said digital representation of said position signal and said position signal is at a reference amplitude.

4,355,274

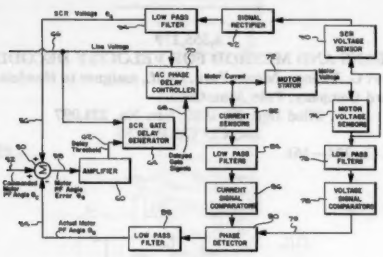
LOAD RESPONSIVE CONTROL SYSTEM FOR CONSTANT SPEED INDUCTION MOTOR

Frank J. Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Sep. 8, 1980, Ser. No. 184,969

Int. Cl.³ H02K *17/04*; H02P *5/40*

U.S. Cl. 318—812 **19 Claims**



1. An energy efficient control system for a constant speed induction motor, comprising:

means for sensing the fundamental component of the motor voltage directly from the motor,

means for sensing the motor current,

means for comparing the phase angles of the sensed fundamental motor voltage component and the motor current to produce a phase difference signal representative of the torque load on the motor, and

AC phase delay controller means responsive to said phase difference signal for adjusting the effective motor voltage to a level sufficient, but not substantially greater than necessary, to maintain substantially constant motor speed, thereby producing an energy efficient motor operation, and AC phase delay controller distorting an input sinusoidal line voltage to a non-sinusoidal motor voltage.

4,355,275

BATTERY CHARGER WITH CURRENT PULSE REGULATION

Russell E. Anglin, 6157 Cottle Rd., San Jose, Calif. 95123

Continuation-in-part of Ser. No. 85,279, Oct. 15, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,091

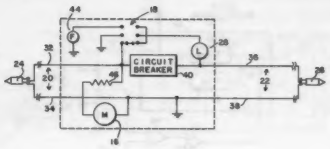
Int. Cl.³ H02J *7/00*

U.S. Cl. 320—21 **11 Claims**

1. A battery charger device with current pulse regulation comprising

first plug means engagable with the cigarette lighter socket of a first vehicle, said first plug means having a first negative contact and a first positive contact,

second plug means engagable with the cigarette lighter socket of a second vehicle, said second plug means having a second negative contact and a second positive contact, said first negative contact and said second negative contact defining a negative contact pair, and said first positive contact and said second positive contact defining a positive contact pair,



means coupling one of said negative contact pair and said positive contact pair together to create a first coupled pair, and

a self resetting, two terminal circuit breaker means coupling the other one of said negative contact pair and said positive contact pair together to create a second coupled pair, said circuit breaker means opening when the current through it exceeds a predetermined level and automatically closing thereafter.

4,355,276

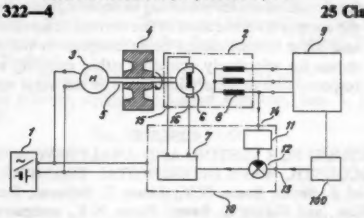
APPARATUS FOR SUPPLYING HIGH POWER ELECTRIC LOADS OPERATED IN A PULSE-LIKE MANNER, ESPECIALLY FOR X-RAY EQUIPMENT

Pal Vittay, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

Filed Apr. 11, 1979, Ser. No. 29,352

Int. Cl.³ H02K *39/00*; H02P *9/12*

U.S. Cl. 322—4 **25 Claims**



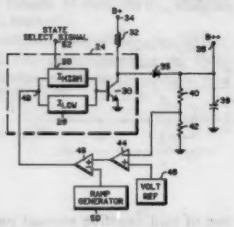
1. An apparatus for supplying power for a high-power pulsatingly operated electric load comprising: a rotatably mounted shaft; a drive for rotating said shaft, said drive having substantially lower nominal power than operational power demand of a load; a flywheel coupled to and rotating with said shaft, said flywheel having a rotational energy corresponding to maximum energy demand of said load; a generator unit having field terminals and an output coupled to said load, said generator comprising an electric rotary machine, said rotary machine having a rotor connected to said shaft; a field power supply having an output connected to said field terminals of said generator unit and having a control input for determining the intensity of exciting current passed through said field terminals; and a control unit for adjusting operational parameters of said load, said control unit having unit output connected to said control input of said field power supply, said field power supply comprising a regulating input receiving a signal proportional to the electrical output of said generator unit to provide a field excitation for said rotary machine capable of maintaining said electrical output adjusted by said control unit.

4,355,277

DUAL MODE DC/DC CONVERTER

Walter L. Davis, Plantation, and James E. Jacobson, Jr., Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Ft. Lauderdale, Fla.

Filed Oct. 1, 1980, Ser. No. 192,778
Int. Cl.³ H02M 3/335
U.S. Cl. 323—351 20 Claims



1. A dual state DC/DC converter for supplying power at two output current levels comprising:

power input means for receiving power at a first predetermined voltage;

current-controlled means coupled to the power input means for providing output power at a second predetermined voltage, the second predetermined voltage being greater than the first predetermined voltage, said output current level being directly related to the magnitude of control current;

first enabling means coupled to the current-controlled means for enabling sufficient control current for the lower of said two output current levels;

second enabling means coupled to the current-controlled means for enabling an amount of control current for the higher of said two output current levels; and

input circuit means for receiving an input signal indicative of the current level required of the current-controlled means, said input circuit means being coupled to the enabling means for selectively actuating either enabling means in response to a predetermined level of the input signal.

4,355,278

METHOD FOR TESTING AND ANALYZING SURFACE ACOUSTIC WAVE INTERDIGITAL TRANSDUCERS

Daniel J. Burns, Rome, N.Y.; James C. Sethares, Burlington, Mass., and Gerald G. Sweet, Rome, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,793
Int. Cl.³ G01R 31/04
U.S. Cl. 324—158 R 6 Claims

1. The method of testing and analyzing the electrical characteristics of interdigital transducers on surface acoustic wave substrates comprising the steps of

applying a surface treatment to the transducer bearing surface of a surface acoustic wave substrate for the purpose of producing a specific molecular alignment in liquid crystals applied to the surface,

fabricating a glass cover plate that is substantially co-extensive with the transducer bearing surface of said substrate,

applying a gold coat to one surface of said glass cover plate for the purpose of producing a specific molecular alignment in liquid crystals applied to the surface,

placing said glass cover plate on the treated surface of said substrate, the gold coated glass cover plate surface being adjacent to said treated substrate surface,

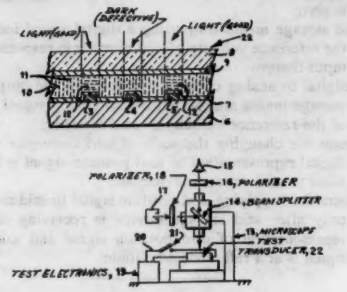
inserting liquid crystal material into the area between said glass cover plate and the substrate surface,

positioning the substrate-cover plate assembly for viewing under a microscope,

directing, from a light source, a light beam through said microscope and through said cover plate,

polarizing the light from said light source,

polarizing the light received through said microscope,



applying an electrical potential to the transducers,

viewing through said microscope the electro-optic effects produced in said liquid crystal by the electric field effects of said applied electrical potential; and

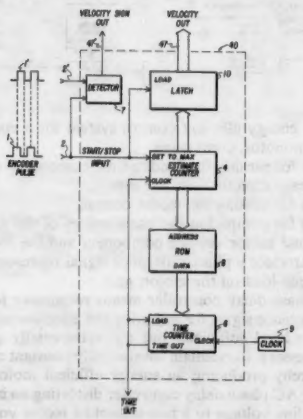
analyzing said electro-optic effects.

4,355,279

MEANS AND METHOD FOR VELOCITY DECODING

Robert G. Younge, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 29, 1980, Ser. No. 221,097
Int. Cl.³ G01P 3/56
U.S. Cl. 324—161 4 Claims



1. A velocity decoding technique comprising the steps of:

a. applying periodic transitions having a period inversely proportional to a velocity;

b. estimating said velocity as an estimated velocity;

c. converting said estimated velocity to an equivalent period;

d. measuring the actual period between said transitions;

e. comparing said measured period with said equivalent period;

f. manipulating said estimated velocity to a next estimated velocity in response to an unequal comparison in step e;

g. repeating steps c through f until said next estimated veloc-

ity equals said actual velocity by having said measured period equal to said converted period; and

h. coupling said estimated velocity to an output when said estimated velocity equals said actual velocity.

4,355,280

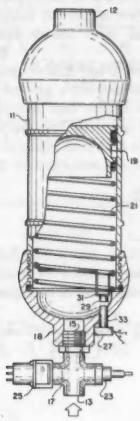
ACCUMULATOR CONDITION INDICATOR WITH SPRING BIASING TO INDICATE LINEAR DISPLACEMENT OF A PISTON

John J. Duzich, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 13, 1980, Ser. No. 149,309

Int. Cl.³ G01B 7/14; G01N 27/72; G01R 33/00

U.S. Cl. 324—207 12 Claims



1. An accumulator condition indicator comprising:

an accumulator housing connected at a first end to a source of pressurized fluid;

a movable member disposed within said housing as to separate said pressurized fluid from a biasing pressurant, said member being adapted to traverse within said housing in response to the applied pressurized fluid;

spring biasing means interposed within said housing in the region of said pressurant and adapted to be compressed by the motion of said movable member so as to provide a motion that is representative on a smaller scale of the motion of the movable member;

magnetic field producing means attached to said spring means to traverse through a desired range within said housing in response to the movement of said movable member;

magnetic sensor means attached to said housing and isolated from said fluid, said sensor means being adapted to provide an electrical signal responsive to the proximity of said field producing means, and

magnetic transfer pole means positioned between said sensor means and said field producing means as to insure magnetic communication between said field and said sensor means.

4,355,281

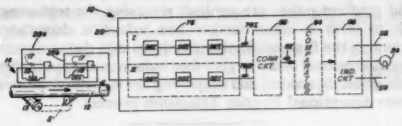
EDDY CURRENT SURFACE FLAW DETECTION EMPLOYING SIGNAL CORRELATION

James M. Toth, Lyndhurst, and Tyler W. Judd, Chardon, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 915,547, Jun. 14, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,387

Int. Cl.³ G01N 27/72; G01R 33/12; G01N 27/82

U.S. Cl. 324—232 6 Claims



2. In an eddy current flaw inspection system for detecting workpiece surface flaws and the like including circuitry for inducing eddy current flow in a workpiece, the improvement comprising:

(a) a pair of substantially coplanar detection coils spaced along the workpiece for detecting flaw indicative variations in eddy current flow in a workpiece and adapted to produce flaw indicative output signals; and

(b) a coincidence circuit connected to the detection coils for rejecting a flaw indicative signal from one coil unless it is coincident with a signal from the other coil;

(c) the eddy current producing circuits characterized by different but similar resonant energization frequencies differing one from another by less than a ratio of about 1.5:1 to reduce inductive cross talk between detection coils.

4,355,282

NUCLEAR MAGNETIC RESONANCE SYSTEMS

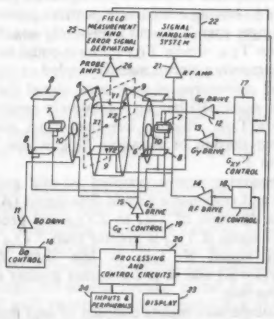
Ian R. Young, Sunbury-on-Thames, and Michael Burl, Iver, both of England, assignors to Picker International Limited, Wembley, England

Filed Jul. 29, 1980, Ser. No. 173,434

Claims priority, application United Kingdom, Aug. 3, 1979, 7927119

Int. Cl.³ G01N 27/00

U.S. Cl. 324—309 19 Claims



1. A method of examining a slice of a body by nuclear magnetic resonance, the method including the steps of: applying magnetic fields to cause resonance preferentially in said slice; applying a first pulsed magnetic field having a gradient across the slice in a first direction to produce phase dispersion in said resonance in said direction in the slice, the direction of the field being periodically reversed; applying a second repetitively

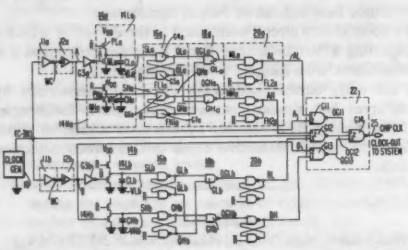
pulsed magnetic field having a gradient across the slice in a second direction orthogonal to the first to produce a further phase dispersion in the second direction, the direction of said second field being the same during each pulse, the timing and magnitude of these field gradients being such that the slice is effectively divided into a matrix of elements, the nuclei within each of a plurality of parallel strips orthogonal to the direction of the gradient of the first pulsed magnetic field resonating within a unique frequency band and nuclei at different positions along each strip being distinguishable by phase dispersion caused by the second pulsed magnetic field; sensing free induction decay and rephasing signals emitted by the nuclei as the field gradient pulses are applied; reversing the rephasing signals to form in effect further free induction decay signals; arranging the first and further free induction decay signals in a two dimensional array to give free induction decays in the two orthogonal directions; and subjecting the signals of the array to a two dimensional Fourier Transform process.

4,355,283

CIRCUIT AND METHOD FOR DUTY CYCLE CONTROL

Russell G. Ott, Cranford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,349
Int. Cl.³ H03K *5/04*
U.S. Cl. 328—61 **10 Claims**



1. The combination comprising:

an input terminal adapted to receive a repetitive input signal (C) having relatively positive portion of duration T_{HC}, and a relatively negative portion of duration T_{LC}, where T_{HC} plus T_{LC} equal a clock period T, and where the ratio of T_{HC} to T is unknown;

a pulse stretching circuit means coupled to said input terminal and responsive to said input signal for producing a first signal (A) having a relatively positive portion of duration T_{HA} longer than T_{HC} and a relatively negative portion of duration T_{LA}, where $T_{HA}+T_{LA}$ is equal to T;

a pulse narrowing circuit means coupled to said input terminal and responsive to said input signal for producing a second signal (B) having a relatively positive portion of duration T_{HB}, which is less than T_{HC}, and a relatively negative portion of duration T_{LB}, where $T_{HB}+T_{LB}$ is equal to T;

first comparator means coupled to said pulse stretching means and responsive to said first signal (A) for comparing the duration of T_{HA} to ZT_{LA} and producing a first control signal if T_{HA} is greater than ZT_{LA} and a second control signal if T_{HA} is less than ZT_{LA}; where $Z=K/(1-K)$ and K is a constant greater than zero and less than one;

second comparator means coupled to said pulse narrowing circuit means and responsive to said second signal (B) for comparing the duration of T_{HB} to ZT_{LB} and producing a third control signal if T_{HB} is greater than ZT_{LB} and a fourth control signal if T_{HB} is less than ZT_{LB};

an output terminal;

output signal selection means having an output connected to said output terminal;

means coupling said input terminal and said pulse stretching and pulse narrowing means to said output selection means for the application to the latter of said first (A), second (B), and input (C) signals; and

means for applying said first, second, third, and fourth control signals to said output signal selection means for producing at said output terminal a signal corresponding either to:

(a) the first (A) signal when T_{HA} is less than ZT_{LA};

(b) the input (C) signal when T_{HA} is greater than ZT_{LA} and T_{HB} is less than ZT_{LB}; or

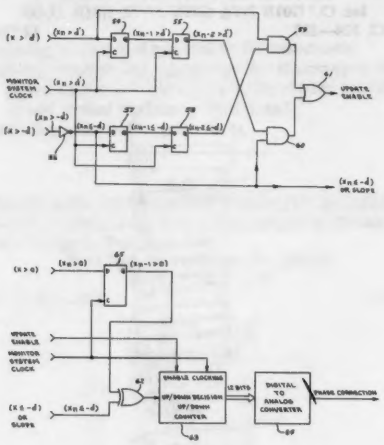
(c) the second (B) signal when T_{HB} is greater than ZT_{LB}.

4,355,284

PHASE CORRECTION SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 100,781, Dec. 5, 1979, abandoned, which is a division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Nov. 24, 1980, Ser. No. 209,616
Int. Cl.³ H03K *6/00*; G01R *25/04, 25/08*
U.S. Cl. 328—155 **9 Claims**



1. A phase correction system for adjusting a phase relationship of periodic data samples, each occurring in a data sample period, which constitute a data signal formed as a sequence of said data samples, said phase correction system adjusting in such a manner that certain of said data samples those intended to have a value substantially equal to a reference signal level at a certain point in a corresponding said data sample period-are adjusted toward occurring at said point in said corresponding data sample period, said phase correction system comprising:

an intended reference level crossing and crossing direction detector means, adapted to receive said data signal, and which has both a crossing detector output and a crossing direction detector output, said intended reference level crossing and crossing direction detector means being capable of determining as a countable data sample, those of said data samples which correspond to and which separate members of acceptable pairs of other said data samples, a said pair of said data samples being acceptable if (i) one said member thereof has a value that substantially exceeds that value of said separating data sample corresponding thereto, and if (ii) said member thereof remaining has a value that is substantially less than that value of said separating data sample corresponding thereto, said intended reference level crossing and crossing direction detector means being capable of providing (i) as a crossing

detector output signal, an indication, at said crossing detector output, as to which of said data samples are said countable data samples, and being capable of providing (ii) as a crossing direction detector output signal, an indication, at said crossing direction detector output, as to which of said countable data samples, on a selected side thereof, has a said member of said acceptable data sample pair corresponding thereto either exceeding or, selectively, being less than that value held by said corresponding countable data sample;

a comparator means, adapted to receive said data signal, and which has a comparison output, said comparator means being capable of providing as a comparator output signal an indication, at said comparator output, as to which of said countable data samples have values which occur on a selected side of said reference signal level;

a counter means, connected to each of said crossing detector output, said crossing direction detector output, and to said comparator output, and which has a counter means output, said counter means being capable of keeping a count total therein and being capable of being enabled to alter said count total by said crossing detector output signal and said counter means being capable of being directed whether to increase or decrease said count total by both said crossing direction detector output signal and said comparator output signal, said counter means being capable of providing at said counter means output, as a counter output signal, a signal having a value which indicates whatever value said count total has reached in said counter means; and

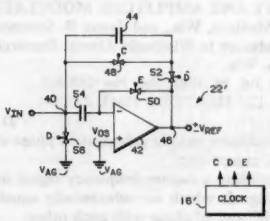
a periodic timing means which has a periodic timing signal of a timing period having a substantially fixed relation to said data sample period, and which is connected to said counter means output, said periodic timing means being capable of varying in phase said data signal with respect to said timing period in response to said counter output signal.

4,355,285

AUTO-ZEROING OPERATIONAL AMPLIFIER CIRCUIT

Stephen H. Kelley; Richard W. Ulmer, and Roger A. Whatley, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1981, Ser. No. 231,079
Int. Cl.³ H03F *1/02*
U.S. Cl. 330—9 **5 Claims**



1. In combination with an operational amplifier having a positive input terminal coupled to a reference voltage, a negative input terminal, and an output terminal, a circuit for compensating for the offset voltage of the operational amplifier, the circuit comprising:

offset capacitance means having first and second terminals, the first terminal being coupled to the negative input of the operational amplifier;

offset switching means for coupling the first terminal of the offset capacitance means to the output terminal of the operational amplifier, and coupling the second terminal of the offset capacitance means to the reference voltage during an offset compensation period; and

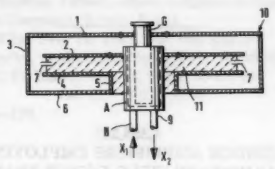
feedback capacitance means having first and second terminals, the first terminal being coupled to the second terminal of the offset capacitance means and, the second terminal being coupled to the output terminal of said operational amplifier.

4,355,286

RESONANT CIRCUIT ARRANGEMENT

Karl-Heinz Knobbe, Ellerbek, and Hellmut Nöldge, Harsburg, both of Fed. Rep. of Germany, assignors to Herfurth GmbH, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,051
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947519
Int. Cl.³ H03F *3/60*; H03B *5/18*
U.S. Cl. 330—56 **10 Claims**



1. A resonant circuit arrangement for anode resonant circuits in output amplifiers of transmitters of high frequency and high radio-frequency power output comprising:

(a) a transmitter tube having a cylindrical grid electrode and coaxial therewith a hollow cylindrical anode member encircling the grid electrode to form therewith a coaxial line portion open at one end thereof;

(b) a first circular metal disk surrounding the grid electrode and in electrically conducting contact therewith, and extending perpendicularly with respect to the axis of the transmitter tube beyond the hollow cylindrical anode member;

(c) a second circular metal disk having a smaller external diameter than the first disk and arranged parallel thereto, and connected to the outer surface of the anode member in electrically conducting contact therewith;

(d) a hollow cylindrical metal covering connected to the peripheral edge of the first circular disk and extending beyond the second circular disk;

(e) a third circular metal disk connected to the cylindrical metal covering, on the side of the second metal disk opposite the first metal disk and parallel thereto, and having an internal diameter greater than the diameter of the hollow cylindrical anode member;

(f) a fourth circular metal disk between the second and third circular metal disks and parallel thereto, and having an internal diameter greater than the diameter of the hollow cylindrical anode member and an external diameter smaller than the external diameter of the third circular metal disk;

(g) a cylindrical metal wall interconnecting the third and fourth circular metal disks at the internal edges thereof;

(h) a plurality of isolating capacitors coupled between the outer edge of the second circular metal disk and the outer edge of the third circular metal disk and electrically connected through the fourth circular metal disk, the cylindrical metal wall, the third circular metal disk, the hollow cylindrical metal covering and the first circular metal disk to the cylindrical grid electrode;

whereby a disk-like, rotationally symmetrical line portion is formed between the first and second circular metal disks, terminating in a transition zone formed between the hollow cylindrical metal covering and the external edge area of the second circular metal disk, and a second disk-like rotationally symmetrical line portion is formed extending

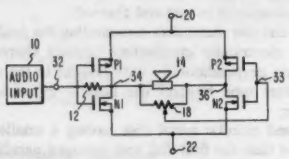
from the transition zone inwardly toward the center of the resonant circuit arrangement with an electrical length of a quarter-wavelength at the operating frequency of the resonant circuit arrangement, so that a current minimum is formed in the transition area between the first and second line portions in the case of the E_{010} wave mode occurring in said line portions, and in the area between the outer surface of the hollow cylindrical anode member, the second circular metal disk, the isolating capacitors, the fourth circular disk, and the cylindrical metal wall a substantially field-free gap is formed accessible through the area between the internal edges of the third and fourth circular metal disks and the outer surface of the hollow cylindrical anode member.

4,355,287

BRIDGE AMPLIFIERS EMPLOYING COMPLEMENTARY FIELD-EFFECT TRANSISTORS

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,363
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—264 **7 Claims**



1. A bridge amplifier for driving a load device having first and second terminals, said bridge amplifier comprising:

first amplifier means connected to an input terminal for providing a signal at the first terminal of said load device;

second amplifier means for providing a signal at the second terminal of said load device, said second amplifier means comprising first and second field-effect transistors of opposite conductivity type, each having respective source, drain, and gate electrodes, the respective source electrodes of said first and second field-effect transistors being arranged for receiving an operating potential therebetween, the drain electrodes of said first and second field-effect transistors being connected to said second terminal of said load device, and the gate electrodes of said first and second field-effect transistors being interconnected without substantial intervening impedance; and

coupling means for direct coupling without intervening amplification the output signal of said first amplifier means to the interconnection of the gate electrodes of said first and second field-effect transistors;

wherein said load device exhibits an impedance, said second amplifier means exhibits a transconductance determined by respective transconductances of said first and second field-effect transistors, and said coupling means exhibits an attenuation factor:

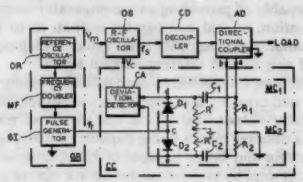
said impedance, said transconductance and said attenuation factor being chosen so that their product is substantially equal to minus unity.

4,355,288

FREQUENCY-STABILIZING SYSTEM FOR GENERATOR OF MICROWAVE OSCILLATIONS

Ezio Cottatellucci, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 16,530, Mar. 1, 1979, abandoned. This application Apr. 22, 1980, Ser. No. 142,681
Claims priority, application Italy, Mar. 7, 1978, 20925 A/78
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—12 **7 Claims**



1. A system for producing a microwave oscillation of stabilized frequency, comprising:

a reference generator emitting a sequence of timing pulses of constant cadence f_r;

a voltage-controlled oscillator generating the microwave oscillation to be stabilized, said oscillator having an operating frequency f_s deviating in a free-running state by less than $f_r/2$ from a nominal frequency equal to $K \cdot f_r$ where K is an integer greater than 1;

phase-comparison means with two circuit branches connected to said oscillator for deriving a pair of instantaneous amplitude samples of predetermined phase relationship from said microwave oscillation in nonconsecutive cycles thereof in the presence of each of said timing pulses and for extracting two low-frequency error signals from changes in the magnitudes of successive pairs of amplitude samples thus derived; and

deviation-detecting means including a differential amplifier with inputs connected to said circuit branches for converting differences between said error signals into a control voltage fed to said oscillator for modifying said operating frequency f_s.

4,355,289

PHASE SHIFT AND AMPLITUDE MODULATOR

James B. Beyer, Madison, Wis., and James B. Summers, Spokane, Wash., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 14, 1980, Ser. No. 168,502
Int. Cl.³ H03C *5/00*; H04L *27/20*
U.S. Cl. 332—17 **21 Claims**

1. A bi-phase modulator having independent phase shift and amplitude control, comprising:

(a) means for splitting a carrier frequency signal into two intermediate signals which are substantially equal in amplitude and 180° out of phase with each other;

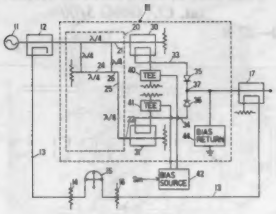
(b) a pair of directional couplers each receiving one of the intermediate signals, each directional coupler providing an isolated output which is proportional to the amplitude of the signal received by the coupler;

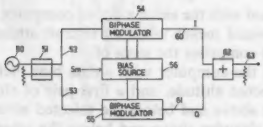
(c) a pair of diodes each connected to receive the isolated output signal from one of the directional couplers, the outputs of the diodes being connected together at a summing junction;

(d) biasing circuit means for providing a current to each of the directional couplers which is added to the isolated output signal from each coupler to allow the diodes to be biased to a null condition level at which the carrier frequency signals passed through the diodes substantially cancel each other at the summing junction; and

(e) bias return circuit means connected to the summing

junction for providing a return for the bias current from the biasing circuit means while passing a signal at the junction which is substantially at the frequency of the carrier signal, whereby the output signal at the summing





junction will be substantially zero at the null condition and whereby the output at the summing junction will be a carrier frequency signal at either a 0° reference phase or a 180° lagging phase if the bias current to one or the other of the diodes is reduced below the null condition current.

4,355,290

ACOUSTIC SURFACE WAVE FILTER

Alexandr S. Bagdasarian, ulitsa Popova,10,kv.12, Fryazino Moskovskoi oblasti; Jury V. Gulyaev, ulitsa Baikalskaya,23,kv.29, Moscow, and Anatoly M. Kmita, prospekt Mira,22,kv.231, Fryazino Moskovskoi oblasti, all of U.S.S.R.

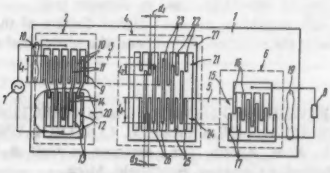
PCT No. PCT/SU80/00037, § 371 Date Nov. 21, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/02090, PCT Pub. Date Oct. 2, 1980

PCT Filed Feb. 29, 1980, Ser. No. 216,995

Claims priority, application U.S.S.R., Mar. 21, 1979, 2733605

Int. Cl.³ H03H *9/64, 9/25*

U.S. Cl. 333—195 **1 Claim**



1. An acoustic surface filter comprising a piezoelectric substrate carrying an input interdigitated converter with electrodes having overlapping portions producing acoustic surface waves for propagation in a first acoustic channel; a coupling element transmitting acoustic surface waves from the first acoustic channel to a second acoustic channel and simultaneously forming the amplitude-frequency characteristic of the filter; and an output interdigitated converter with electrodes having overlapping portions receiving acoustic surface waves propagating in the second acoustic channel; wherein the coupling element contains two rows of electrodes whereof each is arranged in a respective acoustic channel and has two groups of electrodes parallel with the electrodes of the respective converter and arrranged so that the electrodes of one group are interposed between the electrodes of the other group, both forming overlapping portions of the electrodes of both groups of a variable length in at least one row, said length being determined by a prescribed pulse response of the filter, the electrodes of the converter arranged in the same acoustic channel as the row of electrodes of the coupling element, and having overlapping portions of a variable length, have overlapping portions of the electrodes of a constant length, the electrodes of one group of one row of the coupling element being galvanically interconnected and galvanically coupled to the electrodes of one group of another row, each electrode of the remaining group of one row having direct galvanic coupling to the respective electrode of the remaining group of the other row.

4,355,291

SEALED ELECTRIC ASSEMBLY WITH CONNECTING TERMINALS

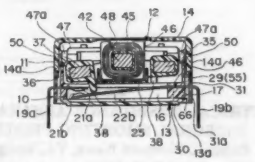
Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics Company, Kyoto, Japan

Filed Feb. 12, 1981, Ser. No. 233,706

Claims priority, application Japan, Feb. 26, 1980, 55-23240; Feb. 26, 1980, 55-23241; Dec. 10, 1980, 55-175146

Int. Cl.³ H01H *9/04*

U.S. Cl. 335—128 **6 Claims**



1. Electric assembly including an insert-molded base member carrying connecting terminals, an electric block member mounted on said base member, and an upper cover fitted onto said base member to cover said electric block member,

said base member comprising inner and outer walls which therebetween form an opening extending vertically through the entire thickness of the base member in such a manner that a lower portion of said upper cover and intermediate portions of said connecting terminals are exposed to said opening,

said opening being filled with a sealant from a bottom side thereof to thereby seal and secure in position said upper cover, connecting terminals and base member.

4,355,292

CONTROL DEVICE, PARTICULARLY FOR AUTOMATIC FURNACES

Roger Lüdi, Rediglcker, and Bernhard Hinni, Regensdorf-Watt, both of Switzerland, assignors to Satronic AG, Regensdorf, Switzerland

Filed Feb. 4, 1981, Ser. No. 231,432

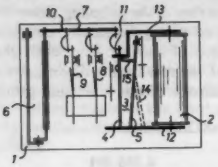
Claims priority, application Switzerland, Mar. 11, 1980, 1909/80

Int. Cl.³ H01H *61/01*

U.S. Cl. 335—145 **3 Claims**

1. A control device for an apparatus having an ignition device, a fault clearing device, and a fuel valve, said control device comprising: a bimetallic element for actuating a contact connected to said ignition device and for actuating a contact connected to said fault clearing device; an electromagnetic relay having first and second yoke members and an armature supported on said first yoke member and cooperating with said second yoke member, said armature comprising a first part having a contact connected to said fuel valve and projecting into a recess in said second yoke member and being magnetically secured at one of two opposed edges of the recess when

the relay is energized, said first part being operably connected to said bimetallic element, said armature also comprising a second part having a contact connected to said bimetallic element and having a projecting bar defining the minimum



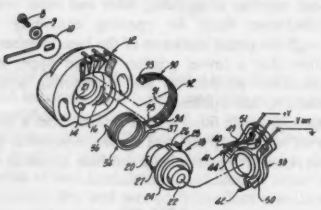
space between said two parts, such that said second part is magnetically secured to said second yoke member to disconnect said bimetallic element when said first part is in the position to open said fuel valve.

4,355,293

ELECTRICAL RESISTANCE APPARATUS HAVING INTEGRAL SHORTING PROTECTION

Barry J. Driscoll, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 86,911, Oct. 22, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,804
Int. Cl.³ H01C 10/00
U.S. Cl. 338—184 11 Claims



1. A flexible resistive element adapted for connection as a potentiometer comprising:

a flexible web;

a first track overlaid on said web and forming a potentiometer resistor, said first track having a first resistive layer between two limits on said track, a first conductive terminal pad and a second conductive terminal pad each respectively electrically connected to said track outwardly of said two limits;

a second track overlaid on said web and forming a signal terminal, said second track displaced from and substantially parallel to said first resistive layer, said second track including a third conductive terminal pad at one end thereof outwardly of one of said limits; and

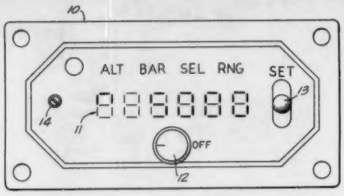
resistive means integral with said second track and between said third conductive terminal and said one limit comprising a protection resistor thereby providing integral shorting protection between said third conductive terminal and at least one of said first and second conductive terminals.

4,355,294

ALTITUDE ALERT SYSTEM

Menashe Ben-David, North Hollywood, and Russell E. Poffenberger, Arleta, both of Calif., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed May 2, 1980, Ser. No. 146,114
Int. Cl.³ G08G 5/00
U.S. Cl. 340—27 R 3 Claims



1. A method with the aid of a digital computer, of selectively energizing visual means when an aircraft attains certain altitudes which comprises the steps of:

providing the computer with a data base including at least the selected altitude, and a first pair of altitudes a fixed amount above and below the selected altitude, a second pair of altitudes above and below the selected altitude a prescribed range less than that of said first pair of altitudes;

continuously providing the computer with the aircraft actual altitude;

repetitively comparing in the computer the actual aircraft altitude and the second pair of altitudes, and energizing the visual means when there is comparison coincidence of the selected altitude and actual altitude, and thereafter energizing the visual means when the actual altitude lies between the first pair of altitudes and energizing an audio means when the actual altitude moves from between the second pair of altitudes to outside the altitude range between said second pair of altitudes; and

automatically energizing said visual means on comparison coincidence of the actual altitude and the selected altitude to provide a first visual symbol, on comparison of the actual altitude and the fixed altitude above the selected altitude to provide a second visual symbol indicating the aircraft should decrease its altitude, and on comparison of the actual altitude and the fixed altitude below the selected altitude to provide a third visual symbol indicating the aircraft should increase its altitude; and

selectively providing a visual digital display of the actual altitude, the selected altitude and the prescribed range.

4,355,295

METHOD AND DEVICE FOR CONNECTING TERMINALS OF A TRAFFIC CONTROL UNIT

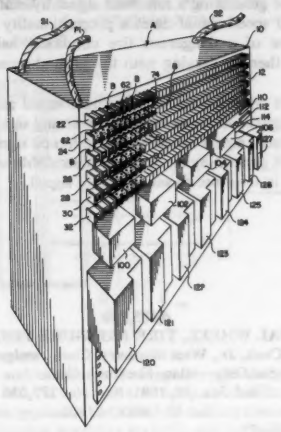
Willard L. Kent, Austin, Tex., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Nov. 13, 1980, Ser. No. 206,442
Int. Cl.³ G08G 1/00; H01R 9/00; G08B 5/36
U.S. Cl. 340—41 R 9 Claims

1. In a traffic control unit for controlling signals displayed to at least two conflicting movements of traffic through an intersection, said control unit including a controller having a number of terminals controllable by applied voltages; load switches for controlling said displayed signals in response to voltages applied to certain load terminals of said load switches; mechanical signal controlling devices with input and output terminals; controller supervising devices having a number of control terminals; and means for allowing manual interconnection of selected ones of said terminals, the improvement comprising: said allowing means including

(a) a number of rows of spaced junction blocks, with each block being fixed onto a common display panel and in-

cluding an inactive coupling element adapted to be permanently wired to a selected one of said terminals, a connector-receiving element and means for electrically connecting said inactive element and said connector-receiving element; and,



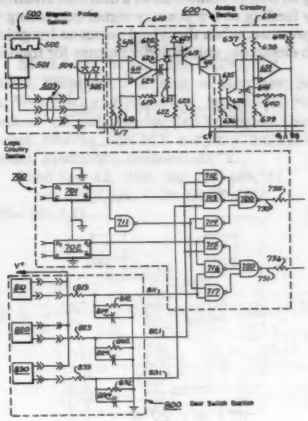
(b) a plurality of electrically separate means for electrically interconnecting selected ones of said connector-receiving elements of said junction blocks wherein said blocks on said common display panel are connected to selected terminals in a pattern not dictated by the pattern of terminals on origin devices of said terminals.

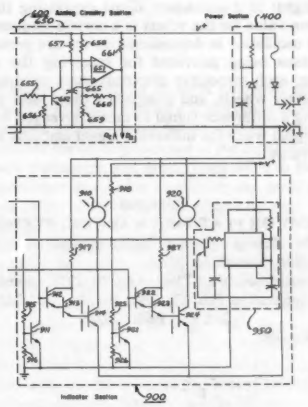
4,355,296
ELECTRIC VEHICLE PERFORMANCE SENSOR AND SHIFT POINT INDICATOR

Gary A. Drone, Springfield, Ill., assignor to Fiat Allis North America, Inc., Deerfield, Ill.

Filed Oct. 3, 1980, Ser. No. 193,533
Int. Cl.³ B60K *23/00*; G08B *21/00*
U.S. Cl. 340—52 R **10 Claims**

1. A vehicle performance monitoring system for instructing a vehicle operator when and into which gear a vehicle transmission, having a plurality of gear ranges, should be shifted in order to maintain the vehicle operating within a desired range of performance for each gear in which the transmission is operated, comprising: detecting means operable in response to a pre-determined condition of an operating vehicle while the vehicle transmission is operating in a pre-determined gear range to generate a condition responsive signal representative of an operational condition of the vehicle while in the predetermined gear range, first circuitry means operatively coupled to a source of electrical power for receiving said condition responsive signal from said detecting means, said first circuitry means further generating a first and a second enabling signal in response to receiving said condition responsive signal, said first circuitry means further including comparator means for receiving said second enabling signal and comparing said second enabling signal with a pre-determined signal level for generating a command signal in response to said second enabling signal exceeding said pre-determined signal level, a first plurality of switching means operatively connected to said source of electrical power and actuable upon placing a vehicle transmission in the pre-determined gear range for generating a gear range signal corresponding to the gear range in which the transmission is operated; each one of said first plurality of switching means being mutually exclusively actuated upon the shifting of the vehicle transmission into one of the gear ranges in which the transmission is operated, a second circuitry means connected to said first circuitry means for receiving said first enabling signal and said command signal for generating at least one digital output; said second circuitry means, further including coincidence detecting means for generating an output signal upon receipt of said at least one digital output and said gear range signal, and indicator means for receiving said out-





put signal from said coincidence detecting means for instructing the vehicle operator when and into which gear the vehicle transmission should be shifted to maintain the vehicle operating within a desired range of performance for the gear in which the transmission is operated.

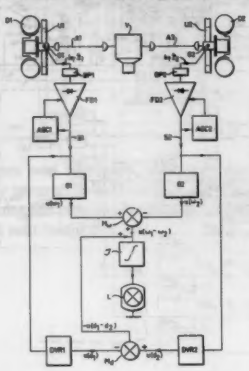
4,355,297
DEVICE FOR INDICATING AIR PRESSURE IN VEHICLE TIRES

Brajnandan Sinha, 1 Spovgränd, Lulea, Sweden (S-951 47), and Sven-Erik Tiberg, Gammelstad, Sweden, assignors to Brajnandan Sinha, Lulea, Sweden

Filed Mar. 28, 1980, Ser. No. 135,151
Claims priority, application Sweden, Apr. 3, 1979, 7902946
Int. Cl.³ B60C *23/00*
U.S. Cl. 340—58 **6 Claims**

1. A device for indicating pressure change in vehicle wheel tires, comprising transducers, which are fixed at wheel suspension means, adjacent the hub of an associated wheel, and continuously affected by the dynamic behavior of the wheel during drive of the vehicle, and electronic means for releasing a

warning signal when the dynamic properties of the wheel depending on its tire pressure pass a predetermined limit, characterized in that the transducers are accelerometers for measuring the vertical acceleration of the wheel, each accelerometer having an output connected to a different electronic unit for separately feeding to it a primary signal decreasing with dropping tire pressure, when the wheel passes an irregularity on the road, each electronic unit including means for transforming the



primary signal to a secondary signal expressing the vertical acceleration value for the wheel in a certain frequency region of the tire oscillation in dependence on the tire pressure, comparing means being provided for receiving the secondary signal from each respective electronic unit, referring to two corresponding wheels, and comparing them with each other and feeding a difference signal to means arranged to release a warning signal when the difference signal amounts to a predetermined value.

4,355,298

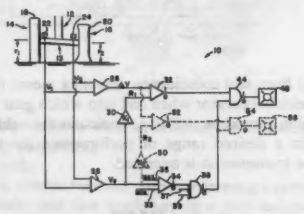
LOW OR FLAT TIRE WARNING SYSTEM

Gregory M. Jessup, Marion, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 67,868, Aug. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,522

Int. Cl.³ B60C *23/00*

U.S. Cl. 340—58 **5 Claims**



1. An aircraft tire condition warning system for an aircraft bogie with two wheels having tires mounted thereon, said warning system comprising:

a speed sensor associated with one of the wheels for generating a speed signal proportional to the angular velocity of said one wheel;

a speed sensor associated with the other of said two wheels for generating a speed signal proportional to the angular velocity of said other wheel;

means for differencing the two speed signals and for generating a differential signal proportional to the difference in angular velocity therebetween;

means for comparing the two speed signals and for generating a ground speed signal which is the smaller of the two speed signals wherein said ground speed signal is proportional to the aircraft ground speed of a wheel having a properly inflated tire thereon;

means for generating a reference signal by multiplying said ground speed signal times a proportionality constant indicative of a dangerous tire condition, said reference signal thereby varying with the ground speed of the aircraft;

means for comparing said differential signal and said reference signal and for generating a warning signal when said differential signal exceeds said reference signal; and

means for generating an operator identifiable warning indication in response to said warning signal.

4,355,299

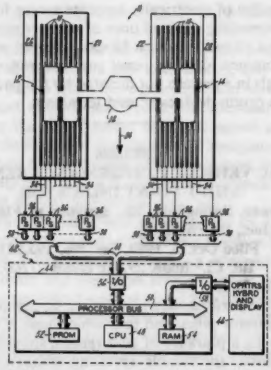
DUAL WHEEL, TIRE PRESSURE TESTER

Willard G. Cook, Jr., West Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,536

Int. Cl.³ B60C *23/00*

U.S. Cl. 340—58 **12 Claims**



1. Apparatus for automatically detecting tire pressures of dual wheel vehicles, comprising:

plurality of fluid filled tire sensors arranged lengthwise in a spaced array parallel to the direction of vehicle travel across a selected section of roadway, the sensors each spaced relative to each other at a distance dependent on the vehicle tire tread width to ensure contact of at least two sensors with each tire footprint as the vehicle is driven along the length of said sensor array, each fluid filled sensor being sealed at one end and having a fluid port at the opposite end thereof, whereby said sensors each provide in response to surface contact thereof with a vehicle tire footprint a fluid pressure increase at said fluid port;

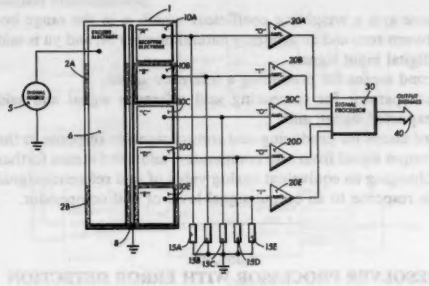
plurality of pressure sensing devices, one for each of said tire sensors and each connected for response to said fluid port thereof, for providing an output signal indication at a magnitude indicative of the quiescent fluid pressure within said associated sensor; and

means responsive to said output signal indications from all of said pressure sensing devices for determining, in response to the magnitude of said signal indications the state of tire pressure for each tire of each dual wheel pair.

4,355,300
INDICIA RECOGNITION APPARATUS

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 14, 1980, Ser. No. 121,405
Int. Cl.³ G06K 7/08
U.S. Cl. 340—146.3 C 29 Claims

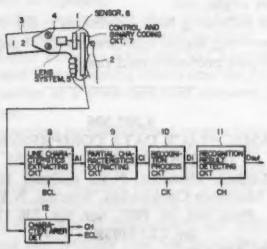


1. Sensing and/or recognition apparatus for determining the genuineness and/or value of a security document having encoding indicia applied to the substrate surface thereof as a thin, transparent coating normally invisible and including particles driven into the surface of said substrate to a substantial depth wherein the particles of indicia material are possessed of an electrical conductivity different from the surrounding portions of the substrate surface, said apparatus comprising a housing, first and second electrode means arranged within said housing and spaced apart to define a gap therebetween, a source of high frequency alternating current coupled to said first and second electrode means for imparting a primary a.c. signal thereacross, means for positioning the document to be tested proximate with and spaced from at least said first electrode means, the encoding indicia being electrically exposed to said first and second electrode means whereby capacitively to induce instantaneously a secondary a.c. signal to said second electrode means providing said encoding indicia is present, said secondary signal being different from said primary signal and means for sensing instantaneously said secondary signal and generating an output signal responsive thereto.

4,355,301
OPTICAL CHARACTER READING SYSTEM

Isao Isshiki; Akihiro Ohoka; Fukuma Sakamoto; Masatoshi Tanaka, and Koji Sato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 27, 1980, Ser. No. 153,222
Int. Cl.³ G06K 9/00
U.S. Cl. 340—146.3 D 10 Claims

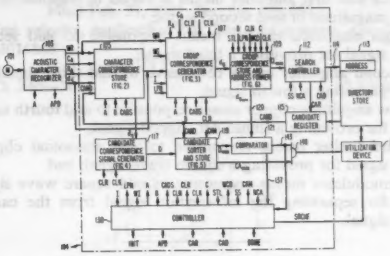


1. An optical character reading system comprising: means for optically scanning a two-dimensional character pattern by a single sensor in a single sweep of said sensor past said character pattern for optically recognizing said character pattern at a plurality of different relative positions between said single sensor and said character pattern to provide a plurality of recognition results; and means for subjecting said plurality of recognition results to selection to provide a final single recognition result of said character pattern.

4,355,302
SPELLED WORD RECOGNIZER

Bernd Aldefeld, Hamburg, Fed. Rep. of Germany; Stephen E. Levinson, Westfield, and Thomas G. Szymanski, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and N. V. Philips Gloeilampenfabrieken, Eindhoven, Netherlands

Filed Sep. 12, 1980, Ser. No. 186,741
Int. Cl.³ G10L 1/00; G06K 9/62
U.S. Cl. 340—146.3 Q 24 Claims



1. A circuit for recognizing an input character string comprising means for storing a plurality of reference character sets in predetermined groups; means for generating a set of signals representative of the correspondence of the input characters to the reference characters; and means responsive to the character correspondence signals for identifying the input character string as one of the stored reference character sets;

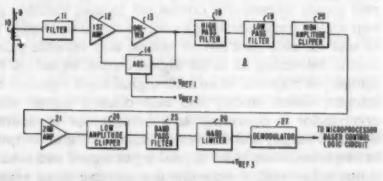
characterized in that

said character string identifying means (104) comprises means (107) responsive to the character correspondence signals for forming a set of signals each being representative of the correspondence of the input character string to one of said predetermined groups; and means (117, 119, 121) jointly responsive to said character correspondence signals, said reference character sets and said group correspondence signals for selecting the reference character set most closely corresponding to said input character string.

4,355,303
RECEIVER FOR A DISTRIBUTION NETWORK POWER LINE CARRIER COMMUNICATION SYSTEM

John S. Phillips, Raleigh, and Waymon A. Melvin, Jr., St. Matthews Twsp., both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,664
Int. Cl.³ H04B 3/02, 15/00
U.S. Cl. 340—310 A 20 Claims



1. A receiver for receiving a carrier signal modulated by an

information signal which is transmitted over a distribution network power line carrier communication system comprising:

coupling means for providing a first signal in response to the carrier signal;

first amplifier means responsive to said coupling means for providing a second signal in response to said first signal, said first amplifier means including first feedback means for determining a gain of said first amplifier means;

means for producing a first and a second reference DC voltages;

first comparator means responsive to said first reference DC voltage and to said second signal;

second comparator means responsive to both said second reference DC voltage and to said second signal;

variable control means responsive to said first and said second comparator means, said variable control means cooperating with said first feedback means such that said gain of said first amplifier means is varied in response to the magnitude of said second signal;

high amplitude clipper means responsive to said second signal for providing a third signal;

second amplifier means responsive to said third signal for providing a fourth signal;

low amplitude clipper means responsive to said fourth signal for providing a sinusoidal clipped signal;

hard limiter means responsive to said sinusoidal clipped signal for providing a square wave signal; and

demodulator means responsive to said square wave signal for separating the information signal from the carrier signal.

4,355,304

DIGITAL COMPANDOR

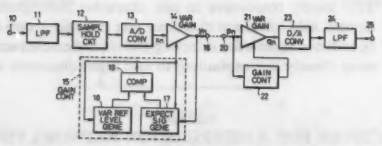
Masao Kasuga, No. 1-6-17, Komachi-Dori, Sagamihara-City, Kanagawa-Ken; Norio Hiyama, No. 202, 7298-1, Ikuta, Tama-Ku, Kawasaki-City, Kanagawa-Ken, and Yoshiyuki Tsuchikane, No. 3-27-10, Kamiikedai, Ohta-Ku, Tokyo, all of Japan

Filed Dec. 18, 1980, Ser. No. 217,949

Claims priority, application Japan, Dec. 17, 1979, 54-163858; Dec. 27, 1979, 54-173084; Jan. 9, 1980, 55-1149; Jan. 9, 1980, 55-1150; Apr. 15, 1980, 55-50081; May 30, 1980, 55-72522

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **7 Claims**



1. A digital compandor capable of selectively increasing and decreasing the dynamic range of a digital input signal thereof comprising:

variable gain circuit means and control signal generating circuit means operatively connected to said variable gain circuit means for generating a control signal to change the gain of said variable gain circuit means, said variable gain circuit means delivering an m bit digital output signal (m being an integer) in response to an n bit digital input signal (n being an integer, where $m<n$) and said control signal when said compandor is operating as a compressor to decrease the dynamic range, and delivering an n bit digital output signal in response to an m bit digital input signal and said control signal when said compandor is operating as an expander to increase the dynamic range,

said control signal generating circuit means comprising: first means producing, in response to the output signal of said variable gain circuit, an expected signal Zn which satisfies the equation

$$Zn = \sum_{i=0}^{N} a_i \cdot | y_{n-i} |$$

where a_i is a weighting coefficient which is in the range between zero and an arbitrary natural number N, and yn is said digital input signal;

second means for producing a reference signal;

a comparator for comparing said reference signal and said expected signal; and

third means for producing said control signal in response to the output signal from said comparator, said third means further changing an equivalent analog value of said reference signal in response to an output signal level of said comparator.

4,355,305

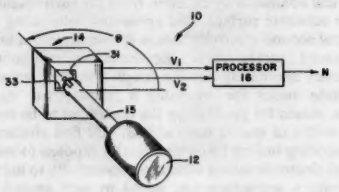
RESOLVER PROCESSOR WITH ERROR DETECTION

Richard W. Cording, Mishawaka, Ind., and Daniel D. Morton, Farmington Hills, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 24, 1980, Ser. No. 143,218

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 SY **16 Claims**



1. A processor for converting the angular position of a resolver into a digital representation thereof in response to a conversion request, wherein the resolver generates a pair of resolver signals as a function of the angular position of the resolver and valid resolver signals are limited to a predetermined range of angular position by physically restraining the resolver rotation to said range, said processor comprising:

means, responsive to the resolver signals, for generating a pair of phase shifted signals with a relative phase shift proportional to the resolver angle;

means for converting the relative phase shift between said phase shifted signals to said digital representations of the resolver angle; and

means for indicating fault conditions in the resolver signals by generating digital representations of angular positions outside said predetermined range.

4,355,306

DYNAMIC STACK DATA COMPRESSION AND DECOMPRESSION SYSTEM

Joan L. Mitchell, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,224

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **11 Claims**

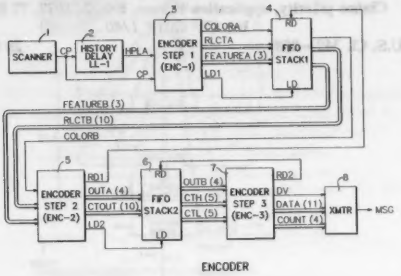
1. In a data compression apparatus wherein an image is scanned line-by-line to sense the characteristics thereof and the positions at which such characteristics are located, the combination of:

first encoding means for producing digital representations of

the sensed characteristics and their respective relationships to other characteristics;

at least one stack each having a plurality of addressable storage positions therein for storing a subset of said digital representations as they are produced by said first encoding means;

means for determining the location in at least one of said stacks, of a digital representation corresponding to a currently sensed characteristic;



ENCODER

second encoding means responsive to said location determining means for generating a coded representation of said stack location, which is provided to a utilization means;

control means functioning in response to each determination made by said location determining means for rearranging said digital representations in at least one of said stacks in accordance with a predetermined scheme.

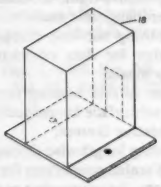
4,355,307
SAFETY STRESS SHUTDOWN SWITCH

Darrel R. Beck, 1601 Glenn Blvd., Duncan, Okla. 73533

Continuation-in-part of Ser. No. 674,301, Nov. 26, 1976, abandoned. This application Oct. 1, 1979, Ser. No. 80,439

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 **5 Claims**



1. An apparatus for indicating a pre-set amount of deflection of a load bearing beam member which is pivoted and reciprocated about an axis comprising:

(a) a first mounting means attached to said beam member at a first selected location on said beam member;

(b) an arm member having a fixed end and a moveably end attached to said first mounting means near the fixed end of said arm member at a predetermined distance from said beam member;

(c) a second mounting means attached to said beam member at a second location spaced a pre-determined distance from the point of attachment of said first mounting means, said pre-determined distance being in a plane parallel to the plane of deflection of said beam member;

(d) a first indicating means removeably and adjustably attached to said arm member near the moveably end;

(e) a second indicating means removeably and adjustably attached to said second mounting means, with said first and second indicating means being moveably spaced from each other so that, as said beam member deflects they move relative to each other in a plane parallel to the plane of deflection of said beam member, said indicating means comprising sensors which produce a signal when said indicating means have moved in said parallel plane a pre-determined distance relative to each other; and

wherein the indicating means comprise generally cylindrical electrically non-conductive sheaths holding electrically conductive sensors wherein at least one sensor is slideably adjustable.

4,355,308
CIRCUIT ARRANGEMENT FOR OPERATING OPTO-ELECTRONIC DISPLAY ELEMENTS ASSIGNED TO TERMINAL DEVICES, IN PARTICULAR IN TELEPHONE SYSTEM

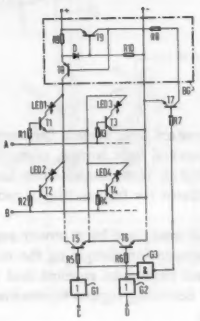
Dieter Blossfeldt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,042

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014845

Int. Cl.³ G09G *3/32*

U.S. Cl. 340—781 **7 Claims**



1. A circuit arrangement for selectively operating a plurality of opto-electronic display elements, comprising:

a plurality of row drive lines and a plurality of column drive lines each adapted to receive control signals of first and second values;

a supply voltage;

a plurality of opto-electronic display elements arranged in rows and columns and a plurality of control switches each connected to control conduction of a respective opto-electronic display element, said control switches distributed to and connected to said row drive lines and said opto-electronic display devices connected to said supply voltage;

a plurality of controllable semiconductor switches each connected to a respective column drive line and connected in parallel across a respective column of said opto-electronic display devices;

a current limiting circuit connecting said opto-electronic display elements to the supply voltage and operable in a low ohmic state and a high ohmic state;

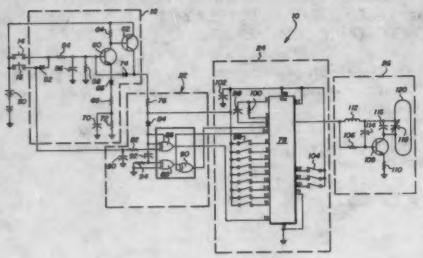
said control switches operable to switch the respective opto-electronic display elements conductive in response to a first value control signal on the respective row drive line and said controllable semiconductor switches operable to shunt the respective column of opto-electronic display devices in response to a first value control signal on the respective column drive line; and

current control switching means connected to each of said column drive lines and to said current limiting circuit and operable to switch the same into its high ohmic state in response to the second value control signals on all of said column drive lines.

4,355,309
RADIO FREQUENCY CONTROLLED LIGHT SYSTEM

Robert M. Hughey, Lewisville; James J. Fairchild, Carrollton, and James H. Brown, Dallas, all of Tex., assignors to Synergistic Controls, Inc., Carrollton, Tex.

Filed Sep. 8, 1980, Ser. No. 185,010
Int. Cl.³ H04Q 9/00; H04B 7/00
U.S. Cl. 340—825.53 10 Claims



1. A remote control light system for controlling the power applied to an electrical light source, comprising:

a battery operated transmission unit having a radio frequency oscillator for transmitting a radio frequency control signal;

a receiving unit energized by a power supply connected to the power source for energizing the electrical light, said receiving unit having an antenna and a radio frequency receiver for detecting signals transmitted from said transmission unit;

switching means located in said transmission unit for selecting the on/off control state for the electrical light attached to the receiving unit;

reprogrammable encoding means for selecting a receiver unit address code to be broadcast by said radio frequency oscillator;

reprogrammable encoding means for selecting the output address code of a receiving unit;

means for digitally encoding the control state signal from said switching means, receiver unit address code and output address code and pulse modulating said encoded data for transmission by said radio frequency oscillator to broadcast said encoded data to said receiver unit;

means for said receiving unit to decode a signal detected by said antenna and radio frequency receiver;

reprogrammable encoding means in said receiving unit for selecting a receiver unit address code to match the receiver unit address code set in said transmission unit;

reprogrammable encoding means in said receiving unit for selecting an output address of said receiver to match an address set in said transmission unit;

means for comparing said transmitted receiver unit and output address code with said receiver unit code and output address code encoded in said receiver;

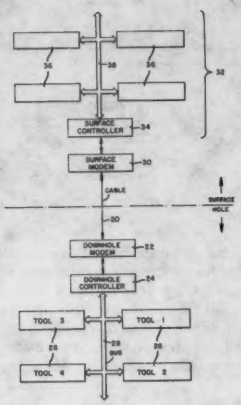
means for setting a latch with the on/off control signal from said digital decoder in response to said comparing means indicating said transmitted receiver unit address code and output address code is equivalent to the receiver unit address and output address code preset in said receiver; and

a relay settable in response to an output signal from a said latching means for connecting or disconnecting an electrical light to a power supply.

4,355,310
WELL LOGGING COMMUNICATION SYSTEM

Antoine Belaigues, Beynes; Alain Paumard, Chatillon Sous Bagneux; Yves Durand, Verrieres Le Buisson, all of France, and Thomas J. Calvert, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 872,504, Jan. 26, 1978. This application Aug. 6, 1979, Ser. No. 63,666
Claims priority, application France, Feb. 3, 1977, 77 02976
Int. Cl.³ G01V 1/40
U.S. Cl. 340—858 25 Claims



19. A well logging system including surface apparatus having surface signal processing equipment and surface telemetry means connected thereto, a signal transmission cable connected to said surface telemetry means, and downhole apparatus, adapted to be supported in a borehole by said cable, said downhole apparatus comprising:

(a) a plurality of pressure-tight, modular housing sections arranged for interchangeable endwise connection;

(b) one of said housing sections comprising a downhole telemetry cartridge for data communication with said surface telemetry means;

(c) at least one other of said housing sections comprising a logging tool for subsurface investigation and for generating data representative thereof;

(d) a bus line extending lengthwise through all of said housing sections, with sealed connectors for electrical continuity between sections, for connecting each said logging tool via said downhole telemetry means to said cables; and

(e) means included in said downhole telemetry cartridge for formatting data received over said bus line from said at least one logging tool into data messages and for transmitting said data messages to said surface telemetry means in data frames, said downhole telemetry means further including means addressable from the surface for controlling the length of the data message to be transmitted per frame.

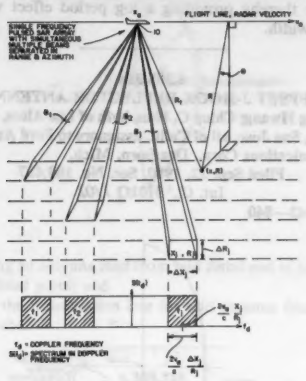
4,355,311
MULTIBEAM SINGLE FREQUENCY SYNTHETIC APERTURE RADAR PROCESSOR FOR IMAGING SEPARATE RANGE SWATHS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Atul Jain, La Canada, Calif.

Continuation-in-part of Ser. No. 17,885, Mar. 6, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,910
Int. Cl.³ G01S 13/00, 13/90
U.S. Cl. 343—5 CM 15 Claims

1. In a multibeam synthetic aperture radar system, wherein

each beam is directed to a different range and azimuth defined target area, a method for processing return data from pulses periodically transmitted simultaneously in each beam at a single frequency, a method for imaging separate range swaths over a range greater than otherwise possible for the interval between periodic pulses comprising the steps of range correlating the return radar data separated in successive interpulse

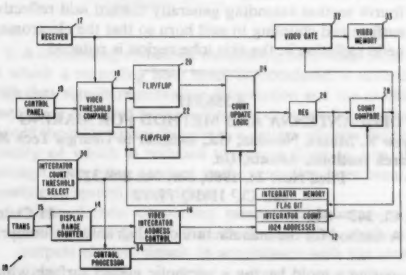


periods to form image data for a plurality of range swaths, and separating in azimuth the return radar data thus correlated in range by filtering a unique Doppler frequency spectrum for each beam to form a plurality of distinct range and azimuth defined beams for imaging a beam selected at a unique azimuth angle in each range swath defined by an interpulse period, said azimuth angle being an angle on either side of a direction from said radar system normal to said range swaths.

4,355,312
RADAR SIGNAL PROCESSOR

Gerald L. Bosi; Randolph L. Hack, both of Fullerton; Thomas C. Cantwell, Yorba Linda, and Richard D. Wilmot, Buena Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 2, 1980, Ser. No. 193,199
Int. Cl.³ G01S *13/70*
U.S. Cl. 343—5 VQ **13 Claims**



1. A processor for operating on video and azimuth signals from a radar system, having an antenna which scans in azimuth, such that the signal-to-noise ratio of the video signals being processed therethrough is enhanced while the delay in detecting the leading edge of the target in the azimuth dimension is substantially constant, said processor comprising:

first means for forming and storing a count indicative of the video signal history for each of a plurality of range zones;

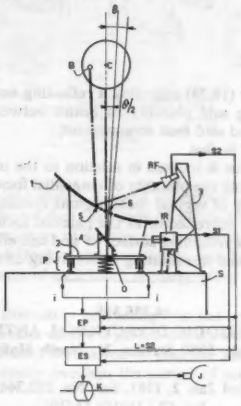
second means for providing a flag signal indicative of a leading edge of a target in the azimuth dimension when the stored count associated with a given range zone exceeds a preselected level and for removing said flag signal on a trailing edge of said target; and

gating means for allowing the radar video signals for a given zone to pass to a display memory during the presence of a flag signal associated with said given zone.

4,355,313
SATELLITE ANTENNA ORIENTATION CONTROL METHOD AND SENSOR CONFIGURATION APPLYING SAID METHOD

Bernard Hubert, Le Cannet, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,810
Claims priority, application France, Jun. 18, 1979, 79 15593
Int. Cl.³ H01Q *1/28*
U.S. Cl. 343—725 **11 Claims**



1. Method of controlling the orientation of an antenna on a satellite in space comprising the steps of

sensing a radio frequency signal reflected from a radio frequency reflector which delivers an error signal proportional to the sighting deviation relative to an earth beacon,

sensing an infra-red signal reflected from an infra-red reflector which sights the center of the earth as seen from the satellite,

controlling the movements of a pivotable orientable platform on which both said reflectors are mounted for movement in unison through use of at least one of said signals,

sensing a signal produced by the pivoting of said orientable platform with respect to the body of the satellite to limit the pivoting of said orientable platform,

controlling the movement of the body of the satellite on which the platform is mounted with at least one of said signals from said radio frequency signal and said infra-red signal, and with a signal relative to the position of the platform oriented in relation to the satellite.

4,355,314
WIDE-FIELD-OF-VIEW ANTENNA ARRANGEMENT

Edward A. Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

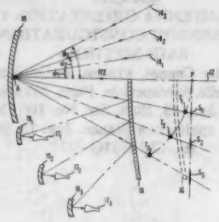
Filed Nov. 28, 1980, Ser. No. 211,104
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—779 **3 Claims**

1. A wide-field-of-view antenna system capable of transmitting or receiving a plurality of beams (14) comprising in combination:

a main focusing reflector (10,20) including a reflecting surface, a boresight axis (12) and a paraxial focus (P), said

reflector producing a tangential focal region and a sagittal focal region associated with each beam of said plurality of beams;

a feed arrangement (17,19) disposed to permit the transmitting or receiving of each beam of said plurality of beams along a separate associated predetermined direction (Φ) with respect to said boresight axis over a wide-field-of-view; and



a subreflector (18,24) including a reflecting surface capable of directing said plurality of beams between said main reflector and said feed arrangement;

characterized in that

the subreflector is located in relation to the main reflector such that both the plurality of tangential focal regions and the plurality of sagittal focal regions remain on the same side of said subreflector as the paraxial focus and do not intersect the reflecting surface of said subreflector for any predetermined transmitting or receiving direction.

4,355,315

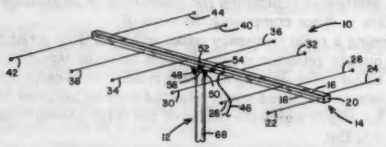
LOG PERIODIC DIRECTIONAL ANTENNA

James R. Zoulek, 5350 Strohm 21, North Hollywood, Calif. 91601

Filed Jan. 2, 1981, Ser. No. 222,244

Int. Cl.³ H01Q *11/10*

U.S. Cl. 343—792.5 **8 Claims**



1. In combination, a log periodic antenna and an antenna mounting for supporting said log periodic antenna, the combination comprising:

a. log periodic antenna including an upper and lower steel channel, rectangular boom, a wooden core disposed therebetween, a plurality of twelve log periodic alternatively offset steel elements affixed and electrically secured on opposing sides thereto along a longitudinal length of said boom, said elements alternatively positioned on opposing sides of said channel, coaxial feed line connected to two opposing short end elements, said coaxial line running through said interior wooden core of said boom and exiting at a substantially mid portion of said boom, and two bolts positioned parallel to said elements and exiting out at a mid portion from said boom, two bolts orthogonally positioned to said first bolts and exiting out substantially at said mid portion of said boom; and,

b. antenna mount including a substantially oval shaped member and including two holes for engaging said orthogonal pairs of bolts on said antenna boom, said oval member perpendicularly affixed to a cylindrical member, said cylindrical member having a diameter and frictionally engaged in a supporting member whereby said mount provides for mounting of said antenna for either horizontal polarization or vertical polarization thereby engaging said bolts in said boom through and protruding from said holes in said antenna mount and being secured thereby with nuts providing for balance of said antenna at first and second polarizations at mobile locations and said alternatively positioned elements on opposing sides of said channels of said boom and alternating along said length of said boom thereby providing a log period effect with wide bandwidth.

4,355,316

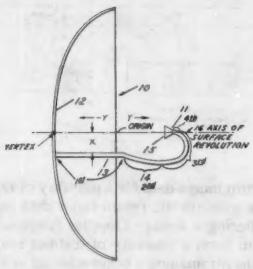
OFFSET J-HOOK REFLECTOR ANTENNA

Yeongming Hwang; Ching C. Han, both of Los Altos, and David F. Ford, San Jose, all of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Sep. 22, 1980, Ser. No. 189,437

Int. Cl.³ H01Q *1/02*

U.S. Cl. 343—840 **4 Claims**



1. A microwave antenna system comprising:

a reflective surface formed as a center section of a concave surface which is a paraboloid of revolution and having a central axis of symmetry;

an electromagnetic feed horn disposed along said axis of symmetry; and

a waveguide feed coupled to said horn which intersects said reflective surface at a position offset from said axis of symmetry, said waveguide feed having a first portion generally extending outward from said reflective surface parallel to said axis of symmetry, a second portion bending in a first direction away from said axis of symmetry, a third portion bending toward said axis of symmetry, a fourth section extending generally toward said reflective surface and coupling to said horn so that the electromagnetic radiation in the side lobe region is reduced.

4,355,317

DISH ANTENNA AND METHOD FOR MAKING

Andrew R. Muzio, Newnan, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Nov. 24, 1980, Ser. No. 209,327

Int. Cl.³ H01Q *19/12*

U.S. Cl. 343—840 **11 Claims**

1. A method for the manufacture of a dish antenna, comprising:

preparing a mold having a parabolic glazed surface which defines a focal length along a focal axis;

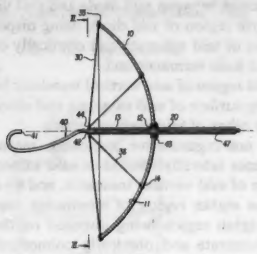
depositing a uniform thickness layer of a plastic material on said glazed surface to form a dish element having an aperture on said focal axis;

removing said dish element from said mold;

fixedly positioning a heavy wall structural tube along said focal axis, said tube extending through said aperture and having a distal end extending towards said focal point;

providing a parabolic reflective coating on said dish element;

fixing small diameter rigid rods between said distal end of said tube and said dish element in such a manner that said tube, rods and dish element form substantially triangular cross-sections;



extending an antenna feed from said distal end of said tube to said focal point; and

passing the transmission line for said antenna feed through said tube.

4,355,318

LASER RECORDING MONITORING SYSTEM

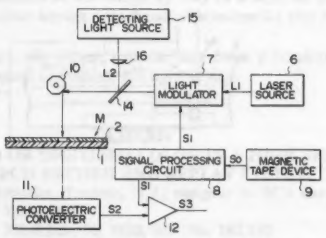
Akio Miyauchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 8, 1980, Ser. No. 213,906

Claims priority, application Japan, Dec. 27, 1979, 54-171915; Dec. 27, 1979, 54-171916

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—76 L **1 Claim**



1. A monitoring system for monitoring laser beam recording, in which a recording laser beam is modulated in accordance with data signals representing information and the modulated laser beam is caused to scan a heat-mode recording medium to record the information thereon as a pattern of parts the optical density of which is reduced to permit light to pass therethrough upon being exposed to the recording laser beam, said monitoring system comprising:

a photo-electric converting means which receives light passing through the heat-mode recording medium and outputs electric signals in accordance with the received light,

a detecting light source which emits a detecting light beam, and means for causing the detecting light beam to scan said heat-mode recording medium along with the modulated laser beam, at least a part of the spot formed on the heat-mode recording medium by the detecting light beam preceding the spot formed by the recording laser beam in the direction of scanning, and

a comparator means which compares the electric signals with the data signals and outputs a deviation signal when the former deviate from the latter.

4,355,319

SYSTEM FOR THERMALLY RECORDING DATA BY PARTIALLY OVERLAPPING SUCCESSIVE DATA SEGMENT PERIODS

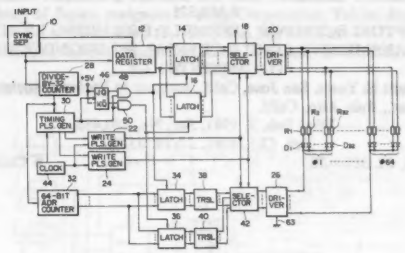
Tadasu Takeuchi, Chofu; Hidetsugu Ishikawa, and Masaaki Nagase, both of Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 235,021

Claims priority, application Japan, Feb. 14, 1980, 55-17468

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **8 Claims**



1. A recording system adapted to receive signals organized into a plurality of data segments of equal data bits each and having a linear array of heating elements arranged in a plurality of identical blocks corresponding to said data segments, the heating elements of each block corresponding to said data bits, comprising:

means for alternately generating first and second pulses of a period greater than the period during which each of said data segments is received so that the period of said first pulse partially overlaps the period of said second pulse; and

means responsive to said first and second pulses for supplying the heating elements of successive ones of said blocks with heating currents corresponding to said data bits.

4,355,320

LIGHT-CONTROLLED TRANSISTOR

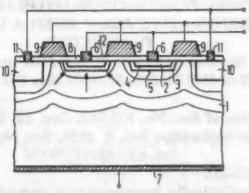
Jenö Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,900

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922250

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **4 Claims**



1. Light-controllable transistor, comprising a semiconductor body having a surface including a given area intended for the incidence of light, a collector zone, and a base zone and an emitter zone each having a smaller area than said semiconductor body, each of said base and collector zones having at least a part thereof emerging to said surface, a pn-junction disposed between said base and emitter zones and a pn-junction disposed between said base and collector zones, each of said pn-junc-

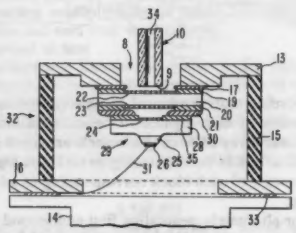
tions emerging to said surface at said given area, at least one auxiliary electrode disposed on and electrically insulated from said surface, said auxiliary electrode covering at least said parts of said base and collector zones emerging to said surface, said auxiliary electrode being connectible to an auxiliary voltage having the same polarity as the emitter bias, and at least one auxiliary zone of the same conduction type as said base zone, said auxiliary zone being embedded in said semiconductor body and being spaced at a lateral distance from said emitter and base zones, and said auxiliary zone being connectible to an auxiliary voltage of the same polarity as the emitter bias.

4,355,321

OPTOELECTRONIC ASSEMBLY INCLUDING LIGHT TRANSMISSIVE SINGLE CRYSTAL SEMICONDUCTOR WINDOW

Robert E. Yeats, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 2, 1981, Ser. No. 230,485
Int. Cl.³ H01L *27/14, 33/00*
U.S. Cl. 357—30 **6 Claims**



1. An optoelectronics assembly for obtaining an efficient coupling with an optical fiber, comprising:

a housing defining an interior cavity and having an opening in the surface thereof;

an active optoelectronic device mounted within said housing and oriented to emit or receive light transmitted through said opening; and

a light transmissive single crystal semiconductor window having an index of refraction greater than 2 within said housing in the vicinity of said opening so that efficient optical coupling is achieved but no physical contact is possible between said optical fiber, positioned exteriorly of said housing, and said active device within said housing.

4,355,322

INTEGRATED GATE TURN-OFF DEVICE HAVING A VERTICAL POWER TRANSISTOR FORMING A REGENERATIVE LOOP WITH A LATERAL TRANSISTOR

Gordon B. Spellman; Herman P. Schutten, and Stanley V. Jaskolski, all of 4201 N. 27th St., P.O. Box 463, Milwaukee, Wis. 53201

Continuation of Ser. No. 972,442, Dec. 22, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,844
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **3 Claims**

1. A monolithically integrated gate turn-off semi-conductor switching device comprising:

a pair of main terminals for carrying load current;

a control terminal which enable said device to be turned On by signal current of one polarity and be turned OFF by a signal current of the opposite polarity;

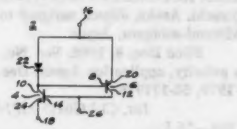
first non-regenerative switch means comprising a power transistor vertically formed in a substrate by first, second and third regions of alternating conductivity types,

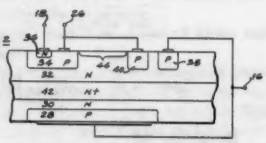
a diode formed by fourth and fifth regions of opposite conductivity types in series with the aforementioned regions of said vertical transistor but separated therefrom by a sixth region of said substrate doped to provide low minority carrier lifetime therein and prevent vertical regenerative action between said diode and said vertical transistor;

said fourth region of said diode being disposed on a bottom surface of said substrate and ohmically connected to one of said main terminals and;

said third region of said vertical transistor being disposed on the top surface of said substrate and ohmically connected to the other of said main terminals;

second non-regenerative switching means comprising a transistor laterally formed in said substrate by said first region of said vertical transistor, and by a seventh region and an eighth region of alternating conductivity types, said eighth region being disposed on the top surface of said substrate and ohmically connected to said second region of said vertical transistor for delivering base drive current to the latter region when base drive current is applied to the common first region of said first and second switching means, said second non-regenerative switching





means being non-conductive in the absence of the last mentioned base drive current;

said common first region of said vertical and lateral transistors having a portion disposed on said top surface of said substrate between said eighth region of said lateral transistor and said second region of said vertical transistor of laterally extended dimension to reduce to a negligible level parasitic interaction between said transistors; and

said control terminal being connected to said second region of said vertical transistor and said eighth region of said lateral transistor to provide a regenerative coupling between said first and second non-regenerative switching means such that application of said signal current of said one polarity to said control terminal initiates regenerative loop current between said first and second individually non-regenerative switching means to maintain conduction of said first such switching means upon removal of said signal current of said one polarity;

said first such switching means upon application of a small signal current of said opposite polarity to said control terminal being turned OFF by interruption of base drive to its said second region.

4,355,323

COUPLER COMPRISING A LIGHT SOURCE AND LENS

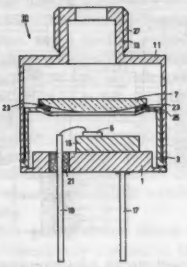
Hendrikus G. Kock, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 16, 1980, Ser. No. 150,386

Claims priority, application Netherlands, May 31, 1979, 7904283

Int. Cl.³ H01L 23/02

U.S. Cl. 357—74 7 Claims



1. A coupling element comprising:

a support;

a cover secured to the support;

a light source mounted on the support inside the cover, said light source emitting a light beam when in operation; and

a lens connected to the cover at a location opposite the light source in the path of the light beam emitted by the light source;

characterized in that:

the cover has a flange;

the lens is connected to the cover at the flange, said lens being secured to the flange by way of a layer of plastic metal solder having a thickness of between 0.1 and 2 mm; and

the support, the cover, and the lens form a hermetically sealed space containing the light source.

4,355,324

SAMPLED OR DIGITIZED COLOR IN A HIGH SPEED SEARCH RECORD AND REPLAY SYSTEM

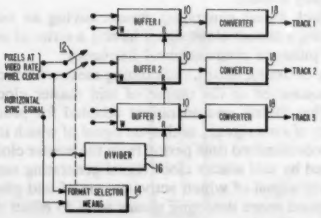
Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,150

Claims priority, application United Kingdom, Mar. 3, 1980, 8007163; Mar. 6, 1980, 8007669

Int. Cl.³ H04N 5/79

U.S. Cl. 358—312 17 Claims



9. In a replay system of the type wherein digital color composite video sampled at a predetermined multiple of the color subcarrier frequency is recorded with each video field or frame disposed on a set of multiple tracks and with only a portion of the recorded information being intended for replay to reconstruct the color video signal during the Moviola mode, the improvement comprising:

replay formating and replication means for directing moviola entire color subcarrier cycle pixel groups from the multiple track set and repeating each moviola color subcarrier cycle pixel group a number of times to provide instantaneous coherent information during the Moviola mode.

4,355,325

WHITE BALANCE CONTROL SYSTEM

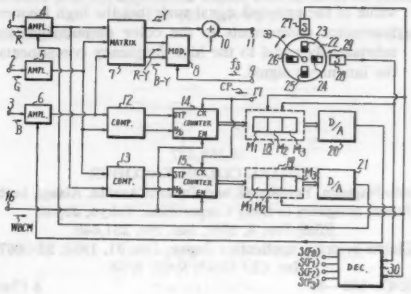
Takashi Nakamura, Hadano, and Akio Sakashita, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,612

Claims priority, application Japan, Mar. 24, 1980, 55-37154

Int. Cl.³ H04N 9/535

U.S. Cl. 358—29 10 Claims



1. A white balance control system for a color television camera having a plurality of manually controllable color temperature compensating filters comprising:

(A) gain control means for electrically adjusting the white balance of a derived color video signal,

(B) level comparing means responsive to said color video signal and connected to said gain control means for producing and supplying a plurality of sets of level setting signals to said gain control means, and

(C) selection means for selectively supplying one of said plurality of sets of level setting signals to said gain control means.

4,355,326

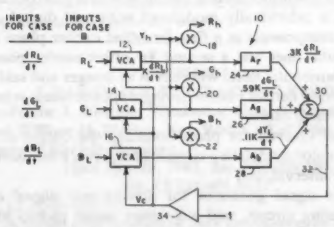
BANDWIDTH ENHANCEMENT NETWORK FOR COLOR TELEVISION SIGNALS

Ronald B. Lee, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 11, 1981, Ser. No. 233,524

Int. Cl.³ H04N 5/21

U.S. Cl. 358—37 21 Claims



1. In a television system which provides a luminance signal having high frequency and low frequency components and

which provides relatively narrow band color input signals, a feed-back network for enhancing the bandwidth of the color input signals, comprising:

multiplying means receiving the color input signals and the high frequency luminance components for multiplying at least the color input signals by a variable factor K and for developing high frequency color output signals such that each one of said color signals comprises the product of respective one of said input color signals, the factor K, and the high frequency luminance components;

means receiving at least the K multiplied color input signals for weighting each such received signal by a selected coefficient;

means for combining the weighted signals to develop a summed signal; and

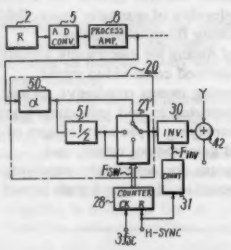
means coupled to the combining means and to the multiplying means for sensing the value of the summed signal and for varying the value of the factor K as a function of the value of the summed signal such that the high frequency luminance components in the color output signals are substantially equal to the high frequency components of the luminance signal.

4,355,327

DIGITAL COLOR ENCODER

Fumio Nagumo, Yokohama, and Takashi Asaida, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,440
Claims priority, application Japan, Jan. 31, 1980, 55-10672
Int. Cl.³ H04N 9/07, 9/18
U.S. Cl. 358—44 **6 Claims**



6. A digital color television camera including a digital color encoder for producing a digital color signal having a predetermined color phase, comprising:

a. solid state image pickup means for reproducing a primary color signal,

b. analog-to-digital converters for converting said reproduced primary color signal to digital color signal components,

c. a digital color modulating circuit in which a carrier signal at $3f_{sc}$ is individually modulated with said digital color signal components at a first $\frac{1}{2}\pi$ offset carrier phase at N horizontal lines and a second $\frac{1}{2}\pi$ offset carrier phase at N+1 horizontal lines, where N is an integer and said first and second carrier phases having opposite phase relationship to each other,

d. a signal inverter for phase-inverting the output of said digital color modulating circuit during every one horizontal line interval, and

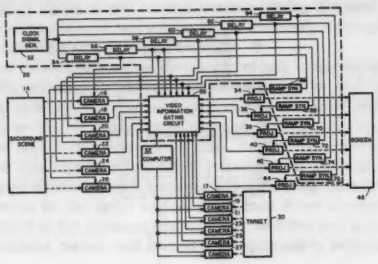
e. a drive signal generator for driving said digital color modulating circuit, said solid state image pickup means and analog-to-digital converter and the outputs of said drive signal generator being synchronized with each other.

4,355,328

360 DEGREE CLOSED CIRCUIT TELEVISION SYSTEM

John J. Kulik, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1981, Ser. No. 236,948
Int. Cl.³ H04N 7/18
U.S. Cl. 358—87 **16 Claims**



1. A 360 degree closed circuit television system comprising, in combination:

a 360 degree reflective display screen;

a background scene broadcast upon said 360 degree reflective display screen;

a plurality of background scene detecting means positioned within said 360 degree reflective display screen off the center thereof adapted for scanning said background scene with each of said detecting means scanning a predetermined angular segment in an azimuthal direction of said background scene, and providing, in response to the scanning of said background scene thereby, a background scene information signal, each of said background scene detecting means having a sync input and an output;

a target;

a plurality of target detecting means positioned adjacent to said target, each of said target detecting means having a sync input and an output adapted for scanning said target, and providing, in response to the scanning of said target thereby, a target information signal;

a transparent display screen having a plurality of rectangular shaped screen elements;

a plurality of projecting means, each projecting means of which has a sync input, a data input, and a blanking signal output, and each projecting means of which is positioned adjacent the outer surface of one of the screen elements of said transparent display screen for broadcasting upon the screen element of said transparent display screen positioned adjacent thereto one of the angular segments of said background scene, and said target for a predetermined time period such that an observer will observe the movement of said target upon said background scene around said transparent display screen;

master clock signal generating means having an output for producing a master clock signal having a series of uniformly spaced pulses of predetermined frequency;

a plurality of timing means, each timing means of which has an input connected to the output of said master clock signal generating means, and an output adapted for producing a plurality of sync signals, each sync signal of which is delayed for a predetermined time period from the master clock signal produced by said master clock signal generating means, and each sync signal of which activates one of said plurality of background scene detecting means so as to effect the scanning of said background scene thereby;

a plurality of waveform generating means, each of which has an input and an output with the inputs thereof respectively connected to the outputs of said plurality of timing means, and the outputs thereof respectively connected to the sync inputs of said plurality of projecting means adapted for

producing, in response to the sync signals produced by said plurality of timing means, a plurality of segmental sawtooth waveform signals, each segmental sawtooth waveform signal of which activates one of said plurality of projecting means such that said plurality of projecting means will broadcast upon said transparent display screen said background scene and said target so as to eliminate from said background scene and said target any distortion therein, thereby improving the resolution thereof;

computing means having a plurality of sync outputs respectively connected to the sync inputs of said plurality of target detecting means, and a control output terminal for providing, in accordance with a target movement program utilized thereby, a plurality of sync signals so as to effect the activation of said plurality of target detecting means, for controlling the phase difference of the sync signals provided thereby with respect to the sync signals provided by said plurality of timing means so as to effect the movement of said target around said transparent display screen, and for producing at the control output terminal thereof a plurality of logic signals;

video information gating circuit means having a plurality of sync inputs respectively connected to the outputs of said plurality of timing means, a plurality of first data inputs respectively connected to the outputs of said plurality of background scene detecting means, a plurality of second data inputs respectively connected to the outputs of said plurality of target detecting means, a plurality of signal blanking inputs respectively connected to the signal blanking outputs of said plurality of projecting means, a control input terminal connected to the control output terminal of said computing means, and a plurality of outputs respectively connected to the data inputs of said plurality of projecting means adapted for synthesizing said target information signals with said background scene information signals so as to form a plurality of background scene-target information signals and thereby effect the broadcasting by said plurality of projecting means of said background scene and said target upon said transparent display screen, and for providing, in response to the logic signals produced by said computing means, for the blanking of multiple visual images of said target such that only one visual image of said target is visible upon said transparent display screen.

4,355,329
REMOTE STATION

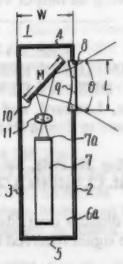
Shinichi Yoshida, Hino, and Kazutaka Kobayashi, Kokubunji, both of Japan, assignors to Nipon Interphone Co., Ltd., Japan

Filed Apr. 1, 1981, Ser. No. 250,052

Claims priority, application Japan, Apr. 14, 1980, 55-50513[U]

Int. Cl.³ H04N 7/18, 5/26

U.S. Cl. 358—108 **5 Claims**



1. A remote station provided with a television camera and coupled to master station of an inter communication system comprising;

(a) a housing of a remote station, said housing including at a least front panel;

(b) a window formed through said front panel;

(c) an adaptor lens engaged with said window for introducing light from an object at a wide angle into said housing;

(d) a pick-up tube of a television camera disposed within said housing; and

(e) a reflector disposed within said housing between said adaptor lens and said pick-up tube so as to reflect the light from said object thereon and project thus reflected light on said pick-up tube.

4,355,330
X-RAY TELEVISION SYSTEM

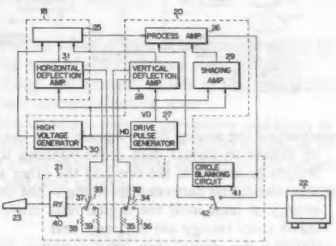
Hiroyuki Fukui, Nishinasuno, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 30, 1980, Ser. No. 116,921

Claims priority, application Japan, Feb. 5, 1979, 54-11392

Int. Cl.³ H04N 7/18, 5/32

U.S. Cl. 358—111 **7 Claims**



1. An X-ray television system comprising:

an X-ray generator to emit X-rays;

an X-ray stop for selectively reducing the irradiation field of the X-rays emitted from said X-ray generator;

an image intensifier to convert the X-rays transmitted through a subject into an X-ray image;

a television camera including an image pickup surface to pick up the X-ray image from said image intensifier and a scanning means for scanning the scanning region of said image pickup surface and converting said X-ray image into a video signal;

a means for supplying a scanning signal to the scanning means of said television camera;

a means for blanking the video signal from said television camera;

a scanning region adjusting means for adjusting the size of the scanning region of said image pickup surface;

a means for selecting one of ordinary fluoroscopic photographing and cine-photographing; and

a means driving said blanking means in the ordinary fluoroscopic photographing and releasing said blanking means and driving said scanning region adjusting means in a direction to reduce said scanning region in the cine-photographing, in response to said selecting means.

4,355,331
X-RAY IMAGE SUBTRACTING SYSTEM

Jean-Pierre J. Georges, Waukesha; Gary S. Keyes, Hartland, and William H. Wesbey, New Berlin, all of Wis., assignors to General Electric Company

Filed Jan. 28, 1981, Ser. No. 229,249

Int. Cl.³ H04N 5/32

U.S. Cl. 358—111 **37 Claims**

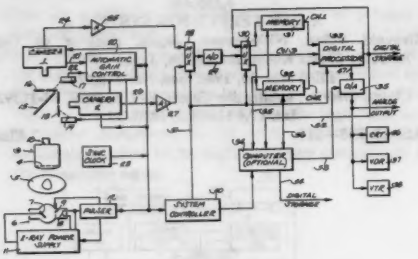
1. A method of producing data representative of an image resulting from combining of x-ray images including the steps of:

projecting from an x-ray source through a subject alternate

x-ray beam pulses that have different energies to produce successive x-ray images,

converting said x-ray images in coincidence with their occurrence to corresponding optical images,

providing a first video camera means having image pick-up means for receiving the optical image corresponding to the one energy x-ray beam energy and a second video camera means having image pick-up means for receiving the optical image corresponding to the other energy x-ray beam energy, said pick-up means each responding to being scanned by producing analog video signals representative of the images, respectively,



converting the analog video signals from the respective pick-up means to digital data corresponding to the respective images produced at the one and the other x-ray energies,

storing the digital data corresponding to the image at one x-ray energy at least until the digital data corresponding to the other x-ray energy are obtained, and

weighting the digital data representative of the respective images and combining the weighted digital data representative of the image at one energy with the data representative of the image at the other energy to yield digital data representative of the difference between the successive images.

4,355,332

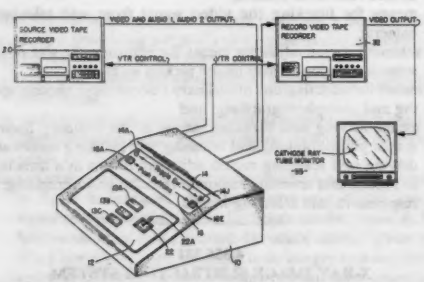
VIDEO TAPE EDITING CONTROL SYSTEM

Gary H. Beeson, Santa Ana, Calif., assignor to Convergence Corporation, Irvine, Calif.

Continuation of Ser. No. 929,667, Jul. 31, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,657

Int. Cl.³ H04N *5/76*; G11B *27/02*

U.S. Cl. 360—14.1 **5 Claims**



1. In a video editing control system for controlling the recording of successive frames of first video information from a video information source onto a video tape in a record video tape recorder up to a selected edit point on the tape, and for then controlling the recording of successive frames of second video information from the video information source onto the video tape in the record video tape recorder after the selected edit point on the tape, the combination of: circuit means coupled to the video information source and to the record video tape recorder for causing only the first video information to be recorded on the tape in the record video tape recorder up to the selected edit point, and for causing only the second video information from the video information source to be recorded on the tape in the record video tape recorder after the edit point; and a control system coupled to said circuit means for reducing the amplitude of the first video information from a particular value to a predetermined minimum value over a predetermined number of frames up to said edit point and terminating the recording of the first video information at the edit point, and for commencing the recording of the second video information at the edit point and for increasing the amplitude of the second video information from a predetermined minimum value to a particular value over a predetermined number of frames following the edit point.

4,355,333

VIDEO SIGNAL PROCESSING CIRCUIT WITH COMB FILTER

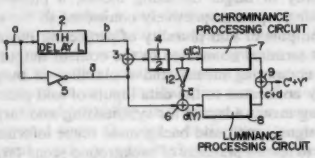
Ichitaro Sato, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,631

Claims priority, application Japan, Apr. 28, 1980, 55/56814

Int. Cl.³ H04N *5/14, 5/21, 9/535*

U.S. Cl. 358—160 **8 Claims**



1. A video signal processing circuit comprising:

(A) an input circuit to which an incoming video signal is applied,

(B) a delay circuit connected to said input circuit for delaying said video signal corresponding to n horizontal scan intervals of said video signal, where n is 1 or 2,

(C) a first mixing means connected to an output of said delay circuit and said input circuit for mixing the non-delayed video signal and the delayed video signal in opposite polarity to each other,

(D) a second mixing means connected to an output of said first mixing means and to said input circuit for mixing said incoming video signal and an inverted output signal from said first mixing means, and

(E) a third mixing means connected to said output of said first mixing means and to an output of said second mixing means for deriving an output video signal without delay.

4,355,334

DIMMER AND DIMMER OVERRIDE CONTROL FOR A DISPLAY DEVICE

James J. Fitzgibbon, Lombard, and Leroy Sutton, Wheeling, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 29, 1981, Ser. No. 268,441

Int. Cl.³ H04N *5/20, 5/58*

U.S. Cl. 358—168 **8 Claims**

1. A dimmer and dimmer override control for adjusting the amplitude of a video signal received by a video display device, comprising:

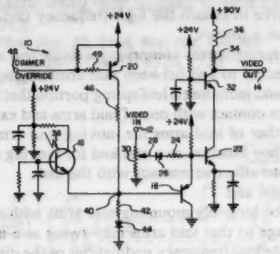
an amplifier for receiving and amplifying the video signal;

a light sensor for generating a dimmer control signal corresponding to the intensity of ambient light;

first transistor means responsive to the dimmer control signal and coupled to the amplifier so as to clip the video

signal and thereby reduce the amplitude of the amplified video signal as the intensity of ambient light decreases; and

second transistor means coupled to the first transistor means



and adapted to receive a dimmer override signal for at least partially disabling the clipping action of the first transistor means so that a large amplitude video signal is output by the amplifier irrespective of the intensity of ambient light.

4,355,335

SIGNAL PROCESSING CIRCUIT FOR USE IN SOLID-STATE CAMERA

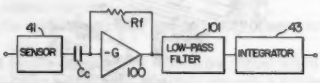
Takuya Imaide, Yokohama; Hiroaki Nabeyama, Kamakura; Masaru Noda, Fujisawa; Michio Masuda, Yokohama; Morishi Izumita, Inashiro, and Shinya Ohba, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,997

Claims priority, application Japan, Oct. 3, 1979, 54-126852

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **15 Claims**



1. A signal processing circuit for use in a solid-state camera having a light receiving section for converting an optical image to an electrical signal, the circuit comprising:

means for sensing the electrical signal output of said light receiving section;

means for amplifying the output of said sensing means, said amplifying means including an amplifying section and a circuit section for narrowing the bandwidth of said amplifying means; and

means for integrating and sampling the output of said amplifying means,

wherein the parameters of circuit elements of said circuit section for narrowing the bandwidth of said amplifying means are set to suppress aliasing of noise inherent in said amplifying means due to said integrating and sampling means.

4,355,336

DIGITALLY CONTROLLED ELECTRO-OPTICAL IMAGING SYSTEM

Tomas Hirschfeld, Framingham, Mass., and Marvin Margoshes, Chevy Chase, Md., assignors to Block Engineering, Inc., Cambridge, Mass.

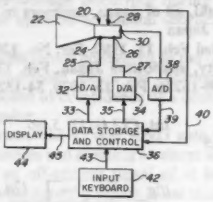
Filed Feb. 22, 1971, Ser. No. 117,285

Int. Cl.³ H04N *3/00, 3/30*

U.S. Cl. 358—217 **3 Claims**

1. In combination with an electro-optical imaging device having target means for receiving an image and means for generating an electron-beam for reading the image formed on said target means in said device, said target being capable of integrating the radiation falling on each point thereof, means for controlling the lateral deflection of said electron beam, and means for providing output signals corresponding to the intensity of the image as read by said electron-beam means, a digital control system comprising:

means for storing a plurality of pairs of digital signals, each corresponding to a pair of coordinates of a corresponding predetermined point on said target;



means for converting selected pairs of said digital signals to corresponding pairs of analog-valued control signals;

means for applying said control signals to said means for controlling said lateral deflection, and;

means for activating said means for generating said beam at a repetition rate for each of said target points in relation to the intensity of the radiation falling on each of said target points for a unit time interval.

4,355,337

METHOD OF RESTORING PICTURES WITH HIGH DENSITY

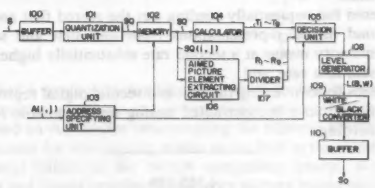
Keiji Sekigawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,484

Claims priority, application Japan, Feb. 22, 1979, 54-19989

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—284 **1 Claim**



1. A picture restoring method in which an original picture is read with low density into square picture elements arranged in the form of a grid, and the original picture is restored with high density by estimating the original picture with the density data of said picture elements, comprising the steps of:

(a) subjecting the density data of said picture elements thus read to decimal quantization, to provide the density levels of said picture elements;

(b) obtaining the density levels of eight sets of picture elements according to said decimal quantization density levels, with three adjacent picture elements among picture elements positioned around an aimed picture element making up one set;

(c) dividing said aimed picture element into nine square minute picture elements arranged in the form of a grid, to determine whether each of said minute picture elements are white or black according to the density levels of each of eight sets of picture elements adjacent to said minute

picture elements, which have been obtained in said step (b); and

(d) converting, when there are more than four black minute picture elements around a minute picture element which has been decided white in said step (c), said white minute picture element into a black minute picture element.

4,355,338

DUPLICATOR

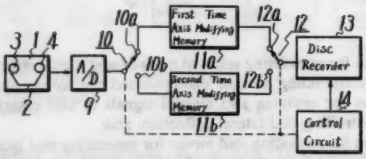
Tatuo Yamamoto; Yoshio Taguchi; Atsushi Miyashita; Shigeo Todoroki; Susumu Katayama, all of Mitaka, and Menoru Eeda, Kawasaki, all of Japan, assignors to Nippon Columbia K.K., Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,676

Claims priority, application Japan, Feb. 13, 1979, 54-15275; Feb. 13, 1979, 54-15276; Feb. 13, 1979, 54-15277; Feb. 13, 1979, 54-15278

Int. Cl.³ G11B *5/86*

U.S. Cl. 360—15 **5 Claims**



1. A duplicator for duplicating an analog signal, comprising:

at least first and second discs;

said first disc having recorded thereon a first digital representation of a first pair of said analog signal;

said second disc having recorded thereon a second digital representation of a second part of said analog signal contiguous to said first part;

means for simultaneously reproducing said first and second digital representations at a first rate;

first and second memory means effective respectively for storing the reproduced first and second digital representations;

means for sequentially reading out the stored first and second digital representations from said first and second memory means at a second rate substantially higher than said first rate; and

means for converting the first and second digital representations into a reconstructed analog signal suitable for recording.

4,355,339

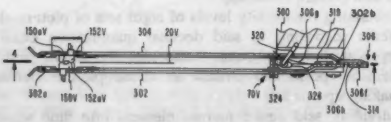
TRANSDUCER CARRIAGE ASSEMBLY

Francis K. King, San Jose, Calif., and Donald J. Wanek, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 974,480, Dec. 29, 1978, abandoned. This application Jan. 9, 1980, Ser. No. 110,728

Int. Cl.³ G11B *5/58*

U.S. Cl. 360—105 **2 Claims**



1. A transducer-carriage assembly for use with a rotatable flexible disk having high frequency undulations and low frequency undulations as the disk rotates and comprising:

a pair of transducers,

a pair of rigid arms adapted to embrace the disk,

spring means for anchoring each of said transducers with respect to one of said arms adjacent an end of the arm for holding the transducers in register opposite each other on and in effective contact with opposite sides of the disk and effective to absorb the high frequency undulations of the disk as it rotates,

second spring means comprising a single leaf spring element connected to and between said arms adjacent their other ends and including a leaf spring portion that is fixed in face to face contact with one of said arms and extends through the other of said arms for moving said arms together so that they function as a unit and for moving said transducers into effective contact with the disk,

a carriage, and

means for hingedly mounting said arms with respect to said carriage so that said arms may swing as a unit to accommodate low frequency undulations of the disk as it rotates.

4,355,340

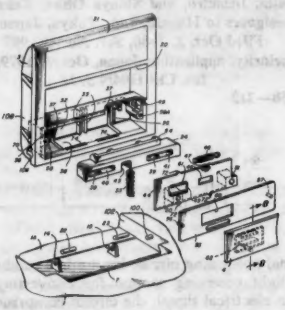
DISC PACK WITH SNAP ON HANDLE

David E. Butz, Littleton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 104,267, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 969,073, Dec. 13, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,911

Int. Cl.³ G11B *23/04*; B65D *85/30*

U.S. Cl. 360—133 **30 Claims**



1. In a disc pack cartridge of the type having a top cover with a handle that can be raised from a horizontal position to a vertical position, a magnetic disc housed within the top cover, the magnetic disc being attached to a hub having a magnetizable armature plate, a removable bottom cover having magnets for latching the removable bottom cover to the top cover by the magnetic attraction between the magnets and the armature plate, a lift plate for lifting the hub away from the magnets of the removable bottom cover to unlatch the removable bottom cover, and lift arms attached to the lift plate and extending through the top cover into a chamber in the handle, the improvement comprising

a yoke constantly housed in the chamber of the handle for sliding movement between an unlatch position and a carry position,

means securing the lift arms to the yoke in a manner enabling the lift arms to pivot on the yoke,

means urging the yoke to the unlatch position,

a slide member in the chamber, disposed above the yoke, the slide member having dependent blocking members adapted to block sliding movement of the yoke from the unlatch position toward the carry position, the slide member being movable to a carry station where the dependent

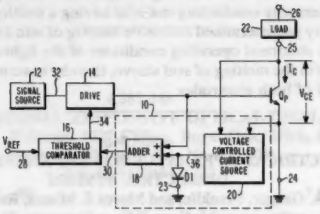
blocking members do not block the sliding movement of the yoke.

4,355,341

POWER PROTECTION CIRCUIT FOR TRANSISTORS

Leonard A. Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,347
Int. Cl.[3] H02H 3/26, 7/20
U.S. Cl. 361—79 9 Claims



1. In an arrangement including a protected transistor having collector, base and emitter electrodes, said base electrode receiving a drive signal and in response an output voltage developing between said collector and emitter electrodes and an output current flowing in the conduction path between said collector and emitter electrodes, a power protection circuit comprising:

a first semiconductor junction;

means responsive to said output voltage for forward biasing said first semiconductor junction to develop a first voltage which is logarithmically related to said output voltage;

the base-emitter junction of said protected transistor being responsive to said output current for developing a second voltage thereacross which is logarithmically related to said output current;

means for adding said first and second voltages to produce their sum; and

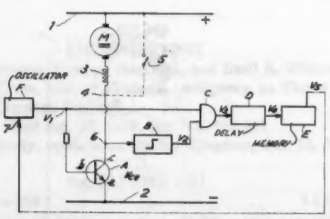
control means for reducing said drive signal when said sum of said first and second voltages exceeds a predetermined limit.

4,355,342

POWER CIRCUIT INCLUDING MEANS FOR AUTOMATICALLY PROTECTING A CHOPPING TRANSISTOR THEREOF

Luciano Franzolini, Milan, Italy, assignor to Sp. El. s.r.l., Milan, Italy

Filed Jan. 17, 1980, Ser. No. 113,234
Claims priority, application Italy, Jan. 30, 1979, 19751 A/79
Int. Cl.[3] H02H 3/20
U.S. Cl. 361—91 2 Claims



1. A power circuit comprising:

a chopping transistor connected in series with a load across a supply of direct current, said transistor having a collector connected to the load, an emitter connected to a terminal of said supply and a base;

an oscillator having an output connected to said base and further having a blocking input, said oscillator generating a train of control pulses periodically rendering said transistor conductive;

threshold means connected to said collector for emitting a train of monitoring pulses of the same polarity as said control pulses in response to the collector/emitter voltage exceeding a predetermined limit during periods of cutoff of said transistor, said limit being also exceeded by a collector/emitter voltage occurring during conduction of said transistor upon an accidental short-circuiting of the load;

an AND gate with inputs connected to the oscillator output and to said threshold means for emitting an off-normal signal in response to coincidence of a control pulse with a monitoring pulse;

delay means connected to said AND gate for suppressing spurious transients and emitting an alarm signal only in the presence of an off-normal signal of at least a predetermined minimum duration which is less than the width of a control pulse; and

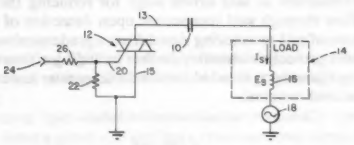
memory means connected to said delay means for delivering a permanent disconnect signal to said blocking input upon being tripped by said alarm signal, thereby disabling said oscillator and preventing further conduction of said transistor.

4,355,343

SEMICONDUCTOR SWITCH FAILURE CONTROL CIRCUIT

Thomas A. O. Gross, Lincoln, Mass., assignor to Jet Spray Corp., Waltham, Mass.

Filed May 15, 1980, Ser. No. 150,201
Int. Cl.[3] H02H 3/00
U.S. Cl. 361—100 14 Claims



1. For a semiconductor bilateral switch having at least an input control electrode and an output electrode coupling to a load and an AC source intercoupling the bilateral switch and load means for interrupting power to the load in the event of a unilateral failure of the switch comprising, energy storage means and means coupling the energy storage means intermediate the semiconductor bilateral switch and load, said energy storage means responsive to a unilateral failure of the bilateral switch to thus couple uni-polarity voltage thereto to cause opening of the path to the load to thus interrupt power to the load.

4,355,344

PROTECTIVE DEVICE ELECTRONIC SEMICONDUCTOR COMPONENT

Maurizio Felici, Milan, and Pietro Menniti, Badolato, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Feb. 25, 1980, Ser. No. 124,624
Claims priority, application Italy, Feb. 27, 1979, 20551 A/79
Int. Cl.[3] H02H 5/04
U.S. Cl. 361—103 8 Claims

1. A circuit arrangement comprising:

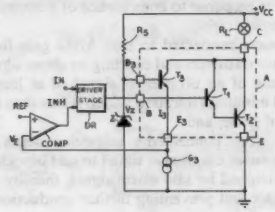
a semiconductor body incorporating an electronic component with first and second conductivity regions contacted

by two main electrodes and with an intervening third conductivity region adjoining a control electrode;

a load connected in series with a supply of operating current across said main electrodes;

a driver stage connected to said control electrode for establishing a selected rate of energization of said load;

temperature-sensing means including at least one ancillary transistor formed in said body with a collector zone, a base zone and an emitter zone, said collector zone being part of said first conductivity region, said body including a substrate and an overlying layer of one conductivity type constituting said first region, portions of opposite conductivity type in said overlying layer forming said third region and said base zone, and enclaves of said one conductivity type in said portions forming said second



region and said emitter zone, one of said main electrodes overlying said substrate and being connected to a first terminal of said supply by way of said load, the other of said main electrodes being connected to a second terminal of said supply; and

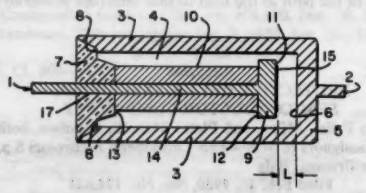
protective circuitry connected to said emitter zone for deriving from the potential thereof, upon a biasing of said base zone to render said ancillary transistor conductive, a monitoring signal varying with the absolute temperature of said body, said protective circuitry having an output connection to said driver stage for reducing the current flow through said component upon detection of a departure of said monitoring signal from a predetermined range, said protective circuitry further including a constant-current generator inserted between said emitter zone and said second terminal.

4,355,345

HIGH CURRENT DRAINING CAPACITY MICRO-LIGHTNING ARRESTER

Leon G. Franchet, Boulogne-Billancourt, France, assignor to Claude, S.A., Boulogne-Billancourt, France

Filed Oct. 14, 1980, Ser. No. 196,512
Claims priority, application France, Oct. 19, 1979, 79 25990
Int. Cl.³ H02H 3/22
U.S. Cl. 361—117 **6 Claims**



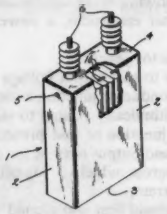
1. A high current draining capacity micro-lightning arrester including an enclosure, an opening in said enclosure, a first electrode traversing said enclosure opening and having a first discharge surface within the enclosure with said first electrode having a relatively thin long cylindrical portion and a flat end portion presenting a relatively significant discharge surface and said entire first electrode composed of an electrically conducting metal capable of withstanding high temperatures which provide a high current draining capacity, a plug placed between the first electrode and the enclosure in order to hermetically seal the enclosure opening about said first electrode, a second electrode presenting a second discharge surface within said enclosure facing said first discharge surface, and a gaseous atmosphere filling the enclosure, characterized in that said first electrode is surrounded by a sleeve in electric and thermal contact with the rear face of said first electrode flat end portion, said sleeve being composed of fusible, electrically and thermally conducting material having a melting point such that any predetermined excessive heating of said first electrode due to abnormal operating conditions of the lightning arrester results in the melting of said sleeve, thereby ensuring the short-circuit of both electrodes.

4,355,346

ELECTRICAL APPARATUS HAVING AN IMPROVED DIELECTRIC SYSTEM

Gary A. Gauger, Franklin, and Marco J. Mason, Racine, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.

Continuation of Ser. No. 25,043, Mar. 29, 1979, abandoned. This application Oct. 21, 1980, Ser. No. 199,260
Int. Cl.³ H01G 4/22
U.S. Cl. 361—318 **4 Claims**



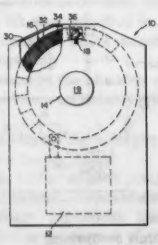
1. An electrical capacitor, comprising a sealed casing and having alternate layers of an electrically conductive material and a dielectric material disposed within the casing, and a dielectric liquid impregnated into said dielectric material, said dielectric liquid consisting essentially of 1,1-bis(3,4-dimethylphenyl)ethane.

4,355,347

TEMPERATURE CONTROL DEVICE

Rachael M. Guthrie, 503 Raccoon Trail, Chattanooga, Tenn. 37419

Filed Jul. 11, 1980, Ser. No. 38,281
Int. Cl.³ G01D 11/28
U.S. Cl. 362—30 **1 Claim**



1. A temperature control device comprising:

a thermostatic control means for automatically controlling the temperature of a location to a predetermined temperature;

a stationary source of light shielded on both of its sides consisting of a set point, and a plurality of translucent temperature indicators through which the light shines which are mounted to be rotated manually to different settings of the control, each setting being indicated by a temperature indicator of a different shade of color, the shades of color ranging gradually from a light blue for a cool temperature to a dark red for a hot temperature.

4,355,348

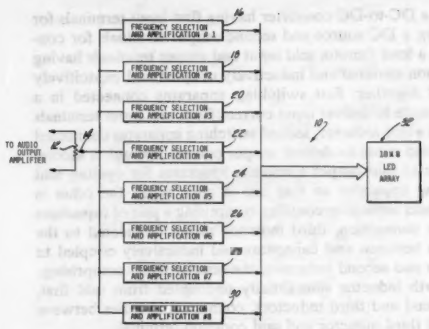
AUDIO SIGNAL RESPONSIVE OPTICAL DISPLAY

Theodore R. Williams, 1927 Clifton, Royal Oak, Mich. 48073

Filed Jul. 30, 1980, Ser. No. 173,633

Int. Cl.³ H04M 1/22

U.S. Cl. 362—86 7 Claims


FREQUENCY SELECTION AND AMPLIFICATION # 1
FREQUENCY SELECTION AND AMPLIFICATION #2
FREQUENCY SELECTION AND AMPLIFICATION #3
FREQUENCY SELECTION AND AMPLIFICATION #4
FREQUENCY SELECTION AND AMPLIFICATION #5
FREQUENCY SELECTION AND AMPLIFICATION #6
FREQUENCY SELECTION AND AMPLIFICATION #7
FREQUENCY SELECTION AND AMPLIFICATION #8
TO AUDIO OUTPUT AMPLIFIER
10 X 8 LED ARRAY

1. Apparatus for providing an optical display as a function of frequency and amplitude of audio music signals and the like comprising input means for connection to an audio signal source, frequency selection means connected to said input means for separating an audio signal into a plurality of frequency components and an optical display comprising a plurality of laterally adjacent parallel linear optical display segments individually connected to said frequency selection means, such that said optical display comprises a composite display with said plurality of linear display segments each having a display characteristic which varies as a function of amplitude of a corresponding said frequency component of said audio signal.

4,355,349

LIGHTING UNIT

Ronald H. Simons, Bishops Stortford, and Basil S. Wilkinson, Waltham Cross, both of England, assignors to Thorn Eni Limited, London, England

Filed Jul. 10, 1980, Ser. No. 168,241

Claims priority, application United Kingdom, Jul. 12, 1979, 7924352

Int. Cl.³ F21S 1/02

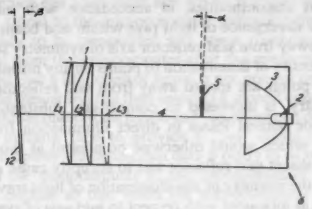
U.S. Cl. 362—153 8 Claims

1. In a glide path lighting system a lighting unit comprising:

a lens

a light source positioned on the optical axis of the lens,

a planar interference filter extending part way across the light path between the light source and the lens and inclined at an angle to a plane normal to the optical axis,



and means for supporting said lens, light source and filter in their respective positions.

4,355,350

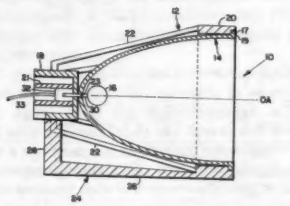
REFLECTOR FOR USE IN AN ARTIFICIAL LIGHTING DEVICE

John J. Mader, Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1980, Ser. No. 183,105

Int. Cl.³ F21V 7/00

U.S. Cl. 362—347 8 Claims



1. An artifical lighting assembly comprising:

an artifical source of illumination having spherical geometry;

a concave, open-ended reflector that is rotationally symmetric about a given axis and has a cross-sectional shape in the form of a 7th order polynomial curve given by the equation:

$$Y = \sum_{n=0}^{7} A_n X^n$$

where Y and X are, respectively, the dependent and independent variables in a Cartesian coordinate system and the terms, A_n, represent the coefficients of said polynomial and are non-zero for the first through seventh order terms, said polynomial curve having a radius of curvature, and hence optical power, which progressively changes in a gradual manner without discontinuities with distance along said curve, said curve being shaped so that the radius of curvature thereof increases with increasing distance from the apex thereof so as to reduce the optical power of said reflector in accordance with increasing distance along said curve; and

means for positioning said source within said reflector in a predetermined manner to project a beam of illumination of predetermined solid angle that is rotationally symmetric about said reflector axis of symmetry to illuminate any plane normal to said reflector axis of symmetry, spaced ahead of said assembly and within said beam angle of divergence and effective range, in a substantially uniform manner over another solid angle that is smaller than said

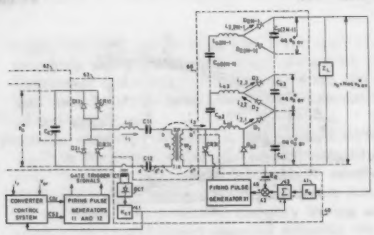
solid angle of said beam of illumination, said reflector operating to reflect light from said source in a manner whereby the intensity of the light reflected from said reflector progressively increases in a gradual manner, without discontinuities, in accordance with increasing angular divergence of light rays within said beam as measured away from said reflector axis of symmetry such that the intensity of illumination of points on any normal plane, which points are spaced away from said reflector axis of symmetry, is increased to compensate substantially exactly for natural losses in direct illumination from said source which would otherwise be present at those same points absent said reflector and to abruptly cause a reduction in the intensity of the illumination of light traveling at angles, as measured with respect to said axis of symmetry, which are greater than said other smaller solid angle.

4,355,351

HIGH REPETITION RATE POWER PULSE GENERATOR

Francisc C. Schwarz, Round Hill Rd., Lincoln, Mass. 01773

Filed May 30, 1979, Ser. No. 43,882
Int. Cl.³ H02M 5/27, 7/19
U.S. Cl. 363—9 **27 Claims**



1. A converter circuit for receiving electrical energy from an electrical power source having a varying or an unregulated electrical potential and for storing a preselected quantity of electrical energy for transfer to a load, comprising in combination:

controllable switch means connecting the electrical power source to receive electrical energy therefrom;

electrical storage means for receiving and storing electrical energy;

coupling means for transferring electrical energy between said controllable switch means and said electrical storage means;

termination means for terminating the transfer of electrical energy between said controllable switch means and said electrical storage means;

first sensor means for sensing the electrical energy in said electrical storage means;

second sensor means for sensing the state of the converter circuit to determine the electrical energy that will be conveyed relative to said electrical storage means after termination of transfer of electrical energy between said controllable switch means and said electrical storage means; and

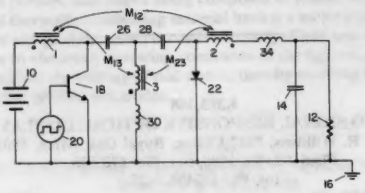
control means receiving the output from said first and second sensor means for activating said termination means prior to the preselected quantity of electrical energy being established in said electrical storage means enabling the additional electrical energy transferred relative to said electrical storage means after activation of said termination means to produce the preselected quantity of electrical energy in said electrical storage means.

4,355,352

DC TO DC CONVERTER

Gordon E. Bloom, 617 Hampshire Rd., West Lake Village, Calif. 91361, and Altan Eris, 30440 Sandtrap Dr., Agoura, Calif. 91301

Continuation-in-part of Ser. No. 63,226, Aug. 3, 1979, Pat. No. 4,262,328. This application May 27, 1980, Ser. No. 153,250
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ H02M 3/335
U.S. Cl. 363—16 **3 Claims**



1. In a DC-to-DC converter having first input terminals for receiving a DC source and second output terminals for connecting a load thereto, said input and output terminals having a common terminal and inductively coupled and capacitively coupled together, first switching apparatus connected in a closed mode to deliver input current from said input terminals through a first inductor, second switching apparatus connected in a closed mode to deliver output current through a second inductor to said output terminals, apparatus for cycling said switching apparatus so that one is open when the other is closed, said capacitive coupling comprising a pair of capacitors in series connection, third inductor means connected to the junction between said capacitors and inductively coupled to said first and second inductors, the improvement comprising:

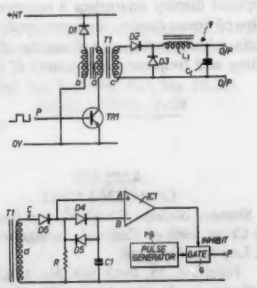
a fourth inductor substantially uncoupled from said first, second and third inductors, connected in series between said third inductor and said common terminal.

4,355,353

POWER SUPPLY APPARATUS

Michael Farrer, Bishops Stortford, England, assignor to Gould Advance Limited, Hainairt, England

Filed Jan. 5, 1981, Ser. No. 222,692
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 **7 Claims**



1. In a converter apparatus having a source of unidirectional current (HT, OV) a transformer (T1) including a primary winding (T1*a*) and an output winding (T1*c*), switching means (TR1) connecting said primary winding with said current source, and control means (PG) for periodically operating said switching means between conductive and non-conductive

conditions, thereby to induct an alternating-current output voltage across said output winding;

the improvement which comprises

(a) inhibiting means (G) normally inhibiting operation of said control means; and

(b) sensing means (T1*d*) responsive to the initiation of transformer reset for disabling said inhibiting means, thereby to permit operation of the apparatus at maximum duty cycle without the risk of transformer saturation.

4,355,354

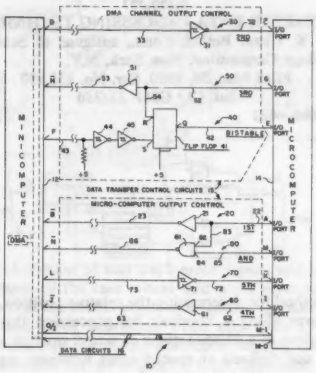
INTERFACE APPARATUS FOR COUPLING A MINICOMPUTER TO A MICROCOMPUTER FOR THE TRANSFER OF DATA BETWEEN THEM AND METHOD FOR USING SAME

Mark F. Kempf, Glen Ellyn; D'Arcy C. Randall, Winfield, and Timothy R. Walworth, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 29, 1978, Ser. No. 920,408

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **11 Claims**



1. Interface apparatus for facilitating asynchronous parallel transfer of data at a speed of up to at least 1.6 megabits per second between a minicomputer and a microcomputer, said apparatus comprising a plurality of bidirectional data circuits parallel coupled between the computers for carrying data between the computers when either computer wants to send data to the other, and data transfer control circuit means coupled between the computers for permitting either computer, when it wants to send data, to:

(a) indicate by means of a control signal to the receiving computer that the sending computer wants to transmit data over the data circuits,

(b) resolve contention between the computers for access to the interface apparatus,

(c) enable the receiving computer to indicate to the sending computer that the receiving computer is ready to receive data over the data circuits,

(d) effect transfer of data from the sending computer to the receiving computer over the data circuits, and

(e) enable the receiving computer to indicate to the sending computer that the receiving computer has received the data, said data transfer control means including:

(A) a first circuit means coupled between the computers for receiving a first control signal from the microcomputer indicating that it wants to send data, which first control signal, as transmitted by said first circuit means, is readable by the minicomputer,

(B) second circuit means coupled between the computers for receiving a second control signal from the minicomputer indicating that it wants to send data, which second control signal, as transmitted by said second circuit means, is readable by the microcomputer,

(C) bistable circuit means coupled between the computers, said bistable circuit means including a bistable multivibrator which has a set input and which is preset to supply a "no" signal to the microcomputer indicating that no data is ready to be transmitted and, upon receiving a strobe signal from the minicomputer after the minicomputer has sensed that a first control signal is not present on said first circuit means and has then asserted a second control signal on said second circuit means and has presented data to said data circuits, then to provide a "yes" signal to the microcomputer indicating that data is ready to be transferred from the minicomputer to the microcomputer over said data circuits so that when the microcomputer reads the "yes" signal it can then input the data on said data circuits,

(D) third circuit means coupled between the computers and to said bistable circuit means for carrying a reset signal from the microcomputer, indicating that it has input the data, to a reset input of said bistable multivibrator to reset same and to indicate to the minicomputer that the data has been received and input by the microcomputer,

(E) fourth circuit means coupled between the computers for receiving a signal from the microcomputer and transmitting same to the minicomputer to indicate to the minicomputer that the microcomputer has data to send to the minicomputer,

(F) fifth circuit means coupled between the computers and receiving a signal from the minicomputer indicating that the minicomputer is ready to receive data from the microcomputer and for transferring the signal to the microcomputer, and

(G) AND circuit means coupled between computers and to said first circuit means and operable to receive the first control signal from the microcomputer at one input thereof which is coupled to said first circuit means and to receive a strobe signal at another input thereof from the microcomputer indicating that the microcomputer is ready to transmit data and upon receiving both signals to send a signal to the minicomputer that the data is ready to be transferred from the microcomputer to the minicomputer over the data circuits.

4,355,355

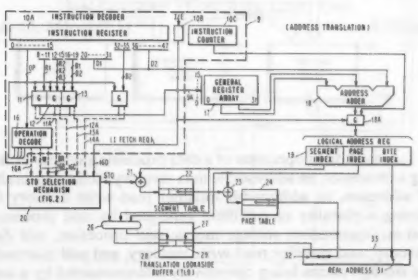
ADDRESS GENERATING MECHANISM FOR MULTIPLE VIRTUAL SPACES

Justin R. Butwell, Milton; Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,570

Int. Cl.³ G06F *9/36*

U.S. Cl. 364—200 **28 Claims**



1. Virtual address translation control means for a logical storage operand address in a data processing system having at least one central processor (CP) with a predetermined number

of general purpose registers (GPR's), some instructions of the CP specifying a GPR address as a base GPR address or as a non-base GPR address, the base GPR address locating a GPR having contents that take part in a calculation of an instruction's logical storage operand address from an instruction's operand address components including at least a base GPR and optionally including either one or both of a non-base GPR and a displacement field, the effective logical storage operand address being generated by means of the addition of the content of the base GPR and the content of any no-base GPR and any displacement field, the virtual address translation control means comprising:

means in the CP for detecting a base GPR address in an instruction, including instruction operation code decoding means for signalling whether a GPR designation in an instruction is a base GPR address or a non-base GPR address,

a plurality of access registers (AR's), each AR being loadable with an address space identifier (ASI) for locating a translation table defining an address space,

means for selecting an AR with the base GPR address provided by the detecting means, and the selecting means not selecting an AR with a non-base GPR address provided by the detecting means,

virtual address translation means receiving the effective logical storage operand address and an ASI from the AR selected by the selecting means to locate a translation table and using the translation table to translate the effective logical storage operand address to a real address in a main storage of the data processing system,

whereby plural ARs containing different ASIs enable the data processing system to concurrently access plural address spaces.

4,355,356

PROCESS AND DATA SYSTEM USING DATA QUALIFIERS

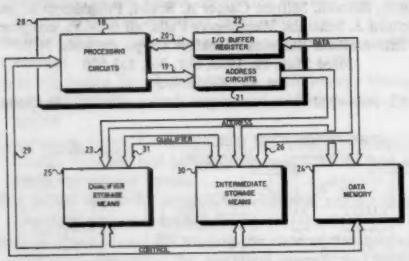
Robert J. A. Bavoux, Rueil Malmaison; Francis R. J. M. Lemaire, and Pierre Salkazanov, both of Plaisir, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 28, 1980, Ser. No. 135,098

Claims priority, application France, Apr. 6, 1979, 79 08715

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **16 Claims**



1. A method of operation of a data processing system including a processor, an addressable data memory having a plurality of addresses, an addressable qualifier read-write memory for storing a plurality of qualifiers generated by said processor, and an intermediate storage means; said processor, said data memory, said qualifier read-write memory, and said intermediate storage means being operatively interconnected by a control bus and an address bus; said processor, said data memory, and said intermediate storage means operatively interconnected by a data bus; said qualifier read-write memory and said intermediate storage means operatively interconnected by a qualifier bus; and each qualifier has an address within said qualifier read-write memory which is the same as an associated predetermined one of said addresses within said data memory, the steps comprising:

(a) storing a qualifier in said intermediate storage means, said qualifier being provided to said intermediate storage means from said processor by way of said data bus;

(b) simultaneously addressing said data memory and said qualifier read-write memory by placing an address signal on said address bus, and

(c) writing the qualifier from said intermediate storage means into said qualifier read-write memory by way of said qualifier bus and at an an address determined by the address signal, while simultaneously writing an associated qualified data word into said data memory at an address determined by the address signal such that said qualifier and said qualified data word are associated by having the same address respectively within said qualifier read-write memory and said data memory,

and wherein each of the qualifiers is characteristic of the data or processing undergone by the data in an associated predetermined address.

4,355,357

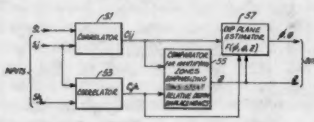
DIPMETER DATA PROCESSING TECHNIQUE

David S. K. Chan, Bethel, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,957

Int. Cl.³ G06F *15/336*

U.S. Cl. 364—422 **39 Claims**



1. A method for determining the relative position of formation features along a borehole by processing three signals representative of a characteristic of said formation along said borehole and derived at spaced apart locations around said borehole; comprising the steps of:

(a) for each of two respective pairs of signals and at each given depth level in a succession of adjacent depth levels, finding a cross-correlation function between respective correlation intervals of the signals of said each pair of signals, when the correlation intervals are depth displaced relative to each other at selected steps;

(b) identifying, from a comparison of the cross-correlation functions of said succession of adjacent depth levels for said two respective pairs of signals, intervals of depth for which respectively the associated cross-correlation functions emphasize, for said each pair of signals, a consistent relative depth displacement of the respective signals of said each pair of signals; and

(c) deriving, from said cross-correlation functions which are within said identified intervals of depth, an estimate of the relative position of said formation features.

4,355,358

ADAPTIVE AIRCRAFT ACTUATOR FAULT DETECTION

Douglas H. Clelford, Trumbull, and Donald W. Fowler, West Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 26, 1980, Ser. No. 181,510

Int. Cl.³ G06F *15/50*; G06G *7/78*

U.S. Cl. 364—424 **2 Claims**

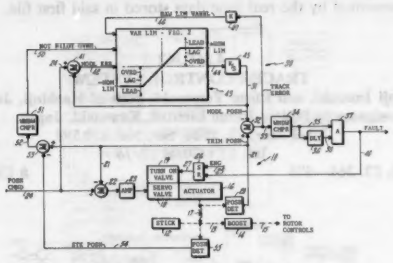
1. An adaptive aircraft actuator fault detection apparatus comprising:

a mechanism for positioning a control surface of the aircraft, said mechanism including a pilot control member movable by the pilot to position said surface;

an actuator resiliently connected to said mechanism and being positionable in response to a position error signal applied thereto to determine the position of said mechanism which will have zero force applied thereto by said resilient connection;

a position detector connected to said actuator for providing a trim position signal indicative of the position of said actuator; and

signal processing means for providing a position command signal, for providing a position error signal to said actuator as the difference between said position command signal and said trim position signal, for presenting a model position signal, for providing a track error signal as the difference between said trim position signal and said model position signal, for providing a model error signal as the difference between said position command signal and said model position signal, for providing said model position signal as the integral of said model error signal to the extent that said model error signal does not exceed a limit, said limit being a nominal limit which is varied by a



limited portion of said track error signal, said limit being increased in the case where said track error signal indicates that the model position is leading the actuator position and being decreased when said track error signal indicates that the model position is lagging the actuator position,and for providing a fault indication signal in response to said track error signal exceeding a threshold magnitude;

characterized by:

means associated with said signal processing means and responsive to said mechanism for providing a pilot override signal when the pilot is forcing said mechanism away from said trim position by more than a predetermined threshold amount, and said signal processing means provides said model position signal as the integral of said model error signal limited to an amount which is further reduced by a limited portion of said track error signal, in response to said pilot override signal when said track error signal indicates that the actuator position is lagging the model position.

4,355,359

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hidetoshi Kanegae, Yokohama, and Masaharu Asano, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 21, 1980, Ser. No. 132,648

Claims priority, application Japan, Mar. 23, 1979, 54-33882; Mar. 23, 1979, 54-33885

Int. Cl.³ F02D *35/00, 13/00*

U.S. Cl. 364—431.04 **10 Claims**

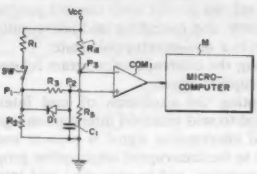
1. A control system for use with an internal combustion engine, comprising:

(a) a digital microcomputer adapted to perform routines for controlling various operating parameters of said engine;

(b) at least one detector for detecting a specified engine operating condition, said detector providing a signal which has a first level during the occurrence of said specified engine operating condition and has a second level during the absence of said specified operating condition; and

(c) interrupt signal generator means for providing an interrupt signal to said microcomputer and causing said microcomputer to enter a routine required for said specified engine operating condition when the time during which said signal from said detector is in said first level exceeds a predetermined value, said interrupt signal generator means being interposed between said microcomputer and said detector.

8. A control system for an internal combustion engine, comprising:



means for detecting a specified engine operating condition and producing an output, said output being a first state signal in response to the occurrence of said specified operating condition;

means for sensing said output signal;

means for comparing the time duration of said first state signal with a predetermined time;

means for generating an interrupt signal when said first state signal duration exceeds said predetermined time; and

a microcomputer operating under a program control sequence in response to sensed engine operating conditions for controlling various engine operating parameters, said microcomputer being responsive to said interrupt signal to temporarily stop execution of said program control sequence to start executing an interrupt routine for controlling said parameters during said specified operating condition.

4,355,360

METHOD FOR PROGRAM CONTROL OF COMPONENTS OF AN AUTOMOTIVE VEHICLE

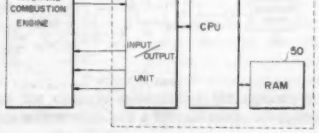
Masaharu Asano, Yokosuka, and Haruto Tanaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 15, 1980, Ser. No. 140,663

Claims priority, application Japan, Apr. 16, 1979, 54-45321

Int. Cl.³ G06F *15/20, 9/46;* G11C *7/00*

U.S. Cl. 364—431.11 **5 Claims**



1. A method for controlling various components of an automotive vehicle having a central processor for controlling said components in response to a stored main control program, a plurality of interruption programs, and an interruption pro-

cessing program, said main control program operative for controlling specified vehicle components on said vehicle when no interruption signals are produced, said plurality of interruption programs operative for effecting preset control operations of said vehicle components, and said interruption processing programs operative in response to said interruption signals for relating a received interruption signal to one of said interruption programs, said method comprising:

generating a plurality of sensor signals, each of said sensor signals being related to a vehicle operating parameter;

producing said interruption signals in response to certain of said sensor signals;

executing said main control program when no interruption signals are being produced;

interrupting the execution of said main control program when an interruption signal is received and transferring data related to said main control program to an auxiliary memory, and executing said interruption processing program in a non-interruptible state;

executing the interruption program related to said received interruption signal;

interrupting the execution of said interruption program related to said received interruption signal when an additional interruption signal is present and storing data related to the interrupted interruption program in said auxiliary memory, and re-executing said interruption processing program for storing a FLAG identifying the interruption program related to said additional interruption signal;

continuing to execute said interruption program related to said received interruption signal;

repeating the step of interrupting the execution of said interruption program related to said received interruption signal in the presence of each additional interruption signal;

executing interruption programs related to said additional interruption signals after completion of the execution of said interruption program related to said received interruption signal in accordance with a priority determined by said stored FLAGs;

after completion of all interruption programs corresponding to said additional interruption signal, continuing the execution of said main control program;

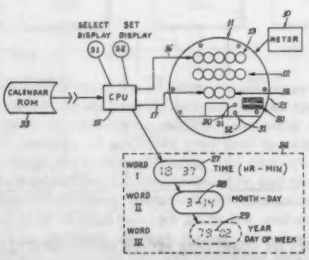
producing control signals for said vehicle components in accordance with said interruption programs and said main control program; and

actuating said vehicle components in response to said control signals.

4,355,361
DATA PROCESSOR APPARATUS FOR MULTITARIFF METER

Richard L. Riggs, East Point, and Richard G. Coppola, Marietta, both of Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Feb. 6, 1980, Ser. No. 119,071
Int. Cl.³ G01R *11/57*
U.S. Cl. 364—464 **15 Claims**

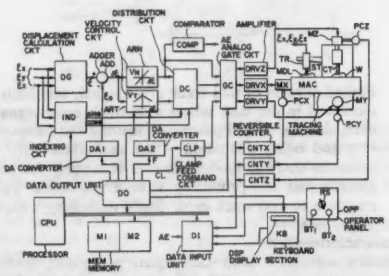


1. In a system for controllably switching a load to and from a source of electrical power according to a predetermined time schedule, the combination comprising: timing means for generating periodic timing signals; programmable data processor means including at least first and second signal storage files, and responsive to said timing signals for generating real time clock data stored in said first file; readable memory means for storing data representative of a plurality of calendar times for effecting schedule events; said data processor means addressing said memory means and being programmed to retrieve said calendar time data stored at a location of said memory means addressed by said data processor means and store the data read-out in said second file; said data processor means being further programmed to compare said real time clock data in said first file with said calendar time data in said second file, and, if the real time represented by the real time data exceeds the calendar time represented by the calendar time data, to cyclically increment the calendar time read-out by incrementing addresses of said memory means until the calendar time represented by the calendar time data read out of said memory means and stored in said second file is greater than the real time represented by the real time data stored in said first file.

4,355,362
TRACER CONTROL SYSTEM

Ryoji Imazeki, and Etsuo Yamazaki, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Kawasaki, Japan

Filed Mar. 17, 1980, Ser. No. 130,598
Int. Cl.³ G05B *19/18*
U.S. Cl. 364—474 **8 Claims**



1. A tracer control system which performs tracer control with variable clamp level by calculating the direction and velocity of tracing through utilization of displacement signals from a tracer head tracing a model surface, said displacement signals being utilized along with a predetermined composite displacement signal for generating normal and tangential velocity components with respect to said model surface for determining said direction and velocity of tracing, said system comprising:

an input unit for entering data defining a series of tracing operations, said data including clamp feed data for limiting the motion of said tracer head on a first predetermined axis of said tracer control system to a respective clamp level for each said tracing operation, and said data including data that is identical for each said tracing operation of said series of tracing operations, said identical data selectively including common starting and end points, and feed limits for the two axes of said tracer control system other than said first axis;

a memory for storing the data received from the input unit;

a processor for selectively reading out the data from the memory and from said data input unit and for controlling each said tracing operation in correspondence therewith;

means for detecting the current position of the tracer head according to each said tracer control system axis and for

providing data corresponding to said current position to said input unit;

a control device including a clamp feed for controlling said clamp level of each said tracing operation according to said clamp feed data to a respective predetermined value for each said tracing operation, and

means for switching between said tracing operation to said clamp feed and back to said tracing during each said tracing operation, depending on the value of said normal velocity component.

4,355,363

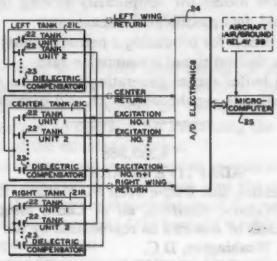
DIGITAL CHARACTERIZATION OF LIQUID GAGING SYSTEM SENSORS

Dwight D. Colby, Roseville; Martin J. van Dyke, Brooklyn Park, and William R. Dougherty, St. Anthony, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,772

Int. Cl.³ G01F *23/00*

U.S. Cl. 364—509 **22 Claims**



1. A characterized liquid gaging system sensor, comprising:

sensor means for sensing a depth of liquid in a tank at a particular location in the tank; and

storage means for storing characterization parameters, each parameter defining a relationship between a liquid depth and a value related to a liquid quantity, each parameter being based on tank shape and volume, on the location of the sensor means, and on a physical condition which affects the accuracy of the value related to the liquid quantity, the storage means comprising means for storing look up tables, there being a first look up table for storing a first set of parameters and a second look up table for storing a second set of parameters, the first and second set of parameters each representing a different best fit between the physical condition and the value related to the liquid quantity, the storage means being connected to the sensor means.

4,355,364

VELOCITY SENSING SYSTEM

Adam J. Gudat, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00115, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980, PCT Pub. No. WO81/02345, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 4, 1980, Ser. No. 150,252

Int. Cl.³ G01P *3/48*; G06F *15/20*

U.S. Cl. 364—565 **9 Claims**

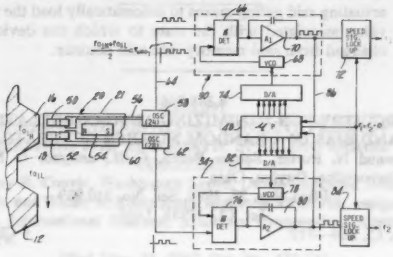
1. A velocity sensing system for parts (12) such as gear teeth having relatively well defined areas (16) of alternately opposite physical presence comprising:

an electronic oscillator (58) having an output (64) and a tank circuit (56), said tank circuit controlling the frequency of signals on said output;

a magnetic sensor (20) disposed adjacent the part (12) and defining a flux path which links said part and in which the magnetic flux intensity varies according to the physical presence of the part immediately adjacent the sensor (20);

said tank circuit (56) linking said flux bath to vary the frequency of the oscillator output signal alternately between a high and a low frequency as the part (12) moves relative to the sensor (20);

means (68) for producing a reference signal having a frequency between the high and low frequency of the oscillator output signal;



means (66, 70) for comparing the oscillator output signal to the reference signal and producing digital outputs of first and second levels as the frequency of the oscillator output is greater than and less than, respectively, the frequency of the reference signal; and

means (38) for determining the velocity of said part (12) relative to the sensor (20) according to the time interval between the first and second level digital outputs.

4,355,365

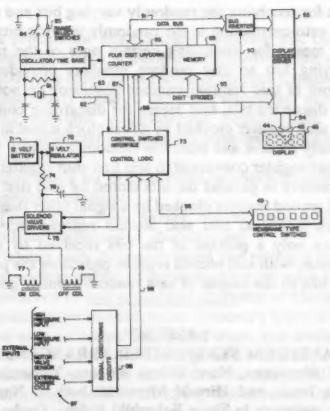
ELECTRONIC INTERMITTER

Oliver W. McCracken, Pauls Valley, Okla.; Larry C. Wortham, Garland, and Robert S. Higgins, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 28, 1980, Ser. No. 144,069

Int. Cl.³ E21B *29/02*; G06F *7/38*

U.S. Cl. 364—569 **15 Claims**



1. A system for cyclicly intermitting the operation of a device between a first state and a second state, comprising:

a counter;

oscillator means for continuously decrementing said counter from a value toward zero;

a programmable memory having a pair of selectively addressable memory locations;

means for storing at a first location in said memory a first time value associated with the duration of said first state and at a second location in said memory a second time value associated with the duration of said second state;

gating means for automatically alternately loading said first and second time values from said memory into said counter; and

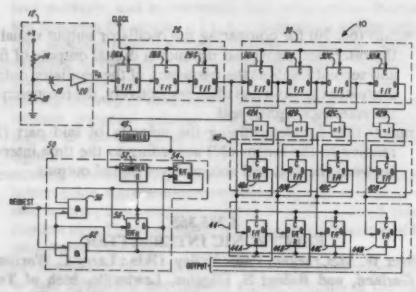
automatic sequencing means responsive to the value in said counter reaching zero for automatically changing the operation of the device from one state to the other and actuating said gating means to automatically load the time value associated with the state to which the device is changed from said memory into said counter.

4,355,366

CIRCUITRY FOR MINIMIZING AUTO-CORRELATION AND BIAS IN A RANDOM NUMBER GENERATOR

Sigmund N. Porter, Solana Beach, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 28, 1980, Ser. No. 210,989
Int. Cl.³ H03K *3/84*
U.S. Cl. 364—717 **9 Claims**



1. A random number generator having an output for providing random numbers, comprising:

means for providing successive and randomly varying bits; and

means for receiving the randomly varying bits and minimizing auto-correlation in the randomly varying bits, including means for discarding certain ones of the randomly varying bits so that random numbers provided at the output of said random number generator do not include the discarded bits, said means for discarding comprising:

a first shift register clocked by a first clock signal in order to serially receive and store the randomly varying bits; and

a second register connected to said first shift register in order to receive in parallel the bits stored by said first register, said second register clocked by a signal other than the first clock signal so that said second register receives and stores only a portion of the bits received by said first register, with said second register providing the portion of the bits to the output of said random number generator.

4,355,367

WAVEFORM SYNTHESIZER ARRANGEMENT

Shigeaki Masuzawa, Nara; Shinya Shibata, Yamatokoriyama; Tetsuo Iwase, and Hiroshi Miyazaki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1980, Ser. No. 127,379
Claims priority, application Japan, Mar. 7, 1979, 54-28061
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—718 **9 Claims**

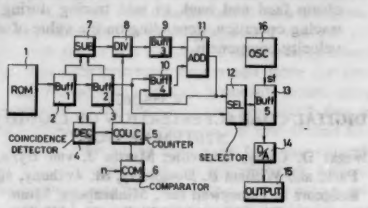
1. A digital filter comprising:

first buffer means for temporarily storing data received from an input source;

second buffer means for temporarily storing data received from said first buffer means;

subtraction means for detecting the difference between the data stored in said first buffer means and data stored in said second buffer means;

data modification means responsive to said subtraction means for altering data received from said second buffer



means when said difference produced by said subtraction means is greater than a predetermined value;

third buffer means for temporarily storing data received from said data modification means; and

oscillator means for producing a periodic signal corresponding to a desired signal transmission rate;

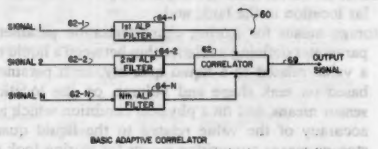
said third buffer means generating a periodic train of data information in synchronism with said periodic signal.

4,355,368

ADAPTIVE CORRELATOR

James R. Zeidler, San Diego; John M. McCool, El Cajon, and Bernard Widrow, Stanford, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1980, Ser. No. 194,168
Int. Cl.³ G06F *15/336*
U.S. Cl. 364—728 **3 Claims**



BASIC ADAPTIVE CORRELATOR

1. An adaptive correlator for correlating a plurality of N input signals, each signal traversing its own channel, comprising:

a plurality of N adaptive linear predictive (ALP) means for filtering, each having an input and an output, for receiving the input signals in their respective channels and adaptively filtering them; and

means having N inputs which are connected to the outputs of the N adaptive filtering means, for correlating its N input signals.

4,355,369

AUTOMATIC BANKING MACHINE

Billy R. Garvin, Euless, Tex., assignor to Docutel Corporation, Irving, Tex.

Continuation of Ser. No. 600,399, Jul. 30, 1975, abandoned. This application Jun. 15, 1979, Ser. No. 48,837
Int. Cl.³ G06F *15/30*
U.S. Cl. 364—900 **9 Claims**

1. An automatic banking machine having a first mode of operation for completing banking functions including cash withdrawals and deposits, and a second mode of operation for initializing operational parameters of the machine for the first mode of operation, comprising in combination:

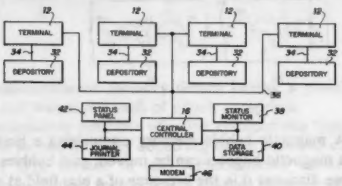
first means for switching from the first mode of operation to the second mode of operation,

second means including a display and a memory of stored selected functions and associated instructions activated in the second mode of operation in response to said means for switching to call from memory and display selected functions of operation of the banking machine in the second mode to enable an operator to initialize operational parameters for controlling machine operation in the first mode,

a keyboard operational in the first mode for customer selection of an available banking function and operational in the second mode for initializing operational parameters, said keyboard responsive to operator input during the second mode for selecting one of the displayed functions and activating said second means to present on the display instructions from memory to an operator for initializing the operational parameters of the selected function,

said keyboard operational in response to an operator input for the selected function to enter data into the memory for initializing the operational parameters of the selected function to establish operation of the banking machine in the first mode of operation, and

controller means for interconnecting said means for switching, said means including the display and memory, and said keyboard.

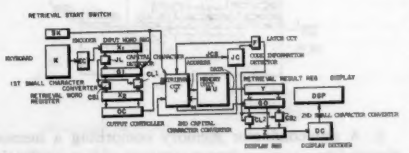


4,355,370

STORAGE FORMAT IN A WORD MEMORY OF ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

Shigenobu Yanagiuchi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1980, Ser. No. 114,744
Claims priority, application Japan, Jan. 26, 1979, 54-8476
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **19 Claims**



1. An electronic dictionary and language interpreter device wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

input means for entering the first word or words in the form that the leading character is represented in a capital character and the remaining character or characters are represented in a small character;

storage means connected to said input means for storing said first word or words therein;

memory means for memorizing the second word or words, having a relationship with the first word or words preliminarily stored in said storage means in the form that the leading character is represented in a small character; and

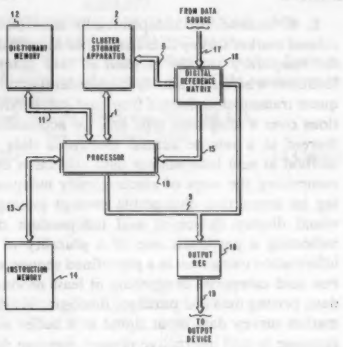
control means for permitting the memory means to generate the second word or words in accordance with the first word or words applied by the input means.

4,355,371

INSTANTANEOUS ALPHA CONTENT PRESCAN METHOD FOR AUTOMATIC SPELLING ERROR CORRECTION

Danny B. Convis, Washington Grove; David Glickman, Frederick, and Walter S. Rosenbaum, Bethesda, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,707
Int. Cl.³ G06F *7/02*
U.S. Cl. 364—900 **6 Claims**



1. In a process for automatically detecting and correcting input misspelled words, a method for improving the selection from a dictionary memory of the set of correctly spelled target words most nearly equal to the input misspelled word while minimizing real-time computational requirements without recourse to a character by character positional match comprising the steps of:

(a) predefining a set of characters or character sets having misspelling reliability;

(b) defining a bit mask having one bit position for each predefined character or character set;

(c) reviewing each dictionary word and setting a binary bit in the corresponding bit position of the bit mask to reflect the presence of said predefined character or character set;

(d) appending the bit mask to the dictionary word in storage;

(e) reviewing each input misspelled word, and setting bits in a binary counter to reflect the presence of said predefined character or character sets within the misspelled word;

(f) determining the EXCLUSIVE OR between the binary counter of the input misspelled word and the bit mask of each respective dictionary target word;

(g) comparing the output of the EXCLUSIVE OR operation to a predetermined threshold value;

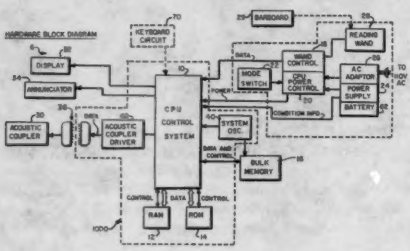
(h) selecting those dictionary target words whose EXCLUSIVE OR'ed output exceeds the threshold value; and

(i) outputting the selected dictionary target words for further processing.

4,355,372
MARKET SURVEY DATA COLLECTION METHOD

Tod Johnson, Scarsdale; Andrew Tarshis, New York, and George Goldberg, Great Neck, all of N.Y., assignors to NPD Research Inc., Floral Park, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,140
Int. Cl.³ G06F 3/04
U.S. Cl. 364—900 9 Claims

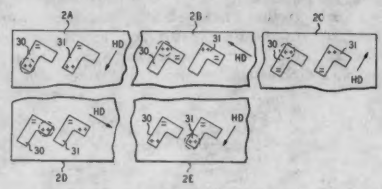


1. A method for independently electronically collecting related market survey data from a plurality of diverse locations for temporary storage at each of said independent diverse locations where said data is independently collected for subsequent transmission thereof from said independent diverse locations over a telephone type link for accumulative processing thereof at a remote central electronic data processor, said method at said independent data collection diverse locations comprising the steps of electronically independently displaying an interactive changeable prompt message display on a visual display device at said independent diverse location indicating a particular one of a plurality of market survey information categories in a predefined sequence of said categories, said categories comprising at least product identification data, pricing data and purchase demographic data; providing a market survey data input signal to a buffer storage means in response to said interactive prompt message display, said provided market survey data input signal comprising an actual data input corresponding to said particular category; selectively interactively processing said provided market survey data input signal at said diverse location in a microcomputer means in accordance with said predefined sequence; providing a verification signal corresponding to said actual data input in response to the input thereof at said independent diverse location for verifying entry of said actual data input; providing a confirmation command input signal to said microcomputer means in response to said verification signal; and independently temporarily storing said displayed particular category market survey data input signal content of said buffer storage means in a static memory means at said independent diverse location in response to said confirmation command input signal and changing said visual display at said diverse location for electronically displaying the next prompt message in said predefined sequence in response to said confirmation command input signal for providing a next temporarily storable corresponding market survey data input signal in response to said next prompt message, said sequence defining a market survey data transaction expository of each product, said interactive sequence recycling for each market transaction for enabling independent integral storage of each product transaction at said diverse location; whereby subsequently transmitted market survey data may be rapidly independently collected at a central location from a plurality of independent diverse locations for said accumulative processing thereof with minimal error potential.

4,355,373
MAGNETIC BUBBLE MEMORY

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,901
Int. Cl.³ G11C 19/08
U.S. Cl. 365—39 6 Claims

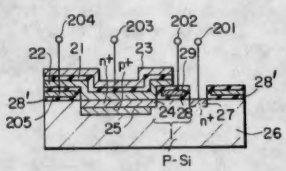


1. A magnetic bubble memory comprising a host layer in which magnetic bubbles can be moved, said bubbles having a collapse diameter d in the presence of a bias field at a collapse value, means for providing a magnetic field reorienting in the plane of bubble movement, propagation means for defining in said host layer at least one path along which bubbles can be moved, said propagation means comprising a repetitive pattern of magnetically soft elements responsive to said in-plane field to exhibit changing pole patterns, said memory being CHARACTERIZED IN THAT adjacent ones of said elements have geometries and orientations to form a field gradient encompassing said adjacent elements said gradient being operative to move a bubble in said gradient from one element to the adjacent element.

4,355,374
SEMICONDUCTOR MEMORY DEVICE

Yoshio Sakai, Hachioji; Mitsumasa Koyanagi, Kokubunji; Hideo Sunami, Hinodemachi, and Norikazu Hashimoto, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 172,378
Claims priority, application Japan, Aug. 1, 1979, 54/97301
Int. Cl.³ G11C 11/40, 11/24
U.S. Cl. 365—149 8 Claims



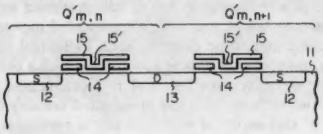
1. A semiconductor memory comprising a memory cell disposed on a semiconductor substrate of first conduction type and including an insulated-gate field effect transistor and a storage capacitor,

wherein the improvement resides in that said storage capacitor comprises: an insulator capacitor including a first electrode disposed on said substrate, an insulating film disposed on the first-named electrode for providing a dielectric, and a second electrode disposed on said insulating film; and a pn junction capacitor including a first impurity region of second conduction type for constituting one of the source and drain of said insulated-gate field effect transistor, and a second impurity region of first conduction type disposed in contact with the first-named impurity region and having a higher impurity concentration than said substrate.

4,355,375
SEMICONDUCTOR MEMORY DEVICE

Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1981, Ser. No. 287,138
Claims priority, application Japan, Jul. 28, 1980, 55/103504
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 5 Claims



1. A semiconductor memory device having a plurality of memory cell transistors each of which comprises:

a semiconductor substrate of a first conductivity type;

first and second impurity doped regions of a second conductivity type formed in said semiconductor substrate to define a channel region which extends between said first and second impurity doped regions;

an insulation film formed on said channel region;

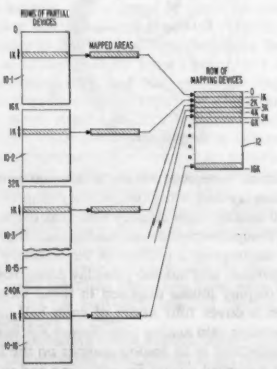
a floating gate electrode formed on said insulation film, said floating gate electrode having first and second portions facing the portions of said channel region adjacent to said first and second impurity doped regions, respectively, said first and second portions of said floating gate electrode being separated from each other over an intermediate portion of said channel region, said first and second portions being connected at a position outside the channel region;

a control gate electrode formed over said first and second portions of said floating gate electrode and on said insulation film over said intermediate portion of said channel region, a part of said control gate electrode facing said intermediate portion of said channel region.

4,355,376
APPARATUS AND METHOD FOR UTILIZING PARTIALLY DEFECTIVE MEMORY DEVICES

Robert T. M. Gould, Downingtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1980, Ser. No. 192,449
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—200 24 Claims



1. A mapping system to permit use of a group of partially defective memory devices as a memory unit, each of said partially defective memory devices characterized as having all of its respective faults within a contiguous address space, said mapping system comprising:

mapping memory means for storing data which would be stored in the defective areas of said group of partially defective memory devices if said group of partially defective memory devices were faultfree;

detection means, coupled to the address input lines to said memory unit, said detection means for detecting when an access is directed to the defective area of one of said group of partially defective memory devices;

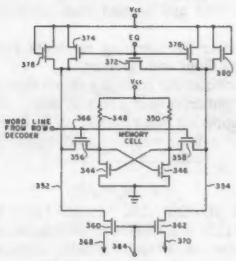
enabling means, connected to said group of partially defective memory devices and responsive to said detection means, said enabling means for selectively enabling accesses to said group of partially defective memory devices or said mapping memory means; and

redirect means, coupled to the address input lines to said memory unit and responsive to said detection means, said redirect means for redirecting an access to one of said defective areas to a corresponding mapping storage area in said mapping memory means, said redirect means including multiplexor means, responsive to an indicated access to said mapping memory means, said multiplexor means for replacing information on a subset of the address input lines to said mapping memory means.

4,355,377
ASYNCHRONOUSLY EQUILLIBRATED AND PRE-CHARGED STATIC RAM

Rahul Sud, Colorado Springs; Kim C. Hardee, Manitou Springs, and John D. Heightley, Monument, all of Colo., assignors to INMOS Corporation

Filed Jun. 30, 1980, Ser. No. 164,283
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 12 Claims



1. In a static RAM having an array of memory cells which are each accessed by selection of a pair of bit lines and a word line in response to memory cell address information received by the RAM, the improvement comprising:

means for asynchronously equilibrating the bit lines including:

a row address buffer for receiving row address information developed externally of the RAM and for developing therefrom true and complimentary row address data; an address transition detector for receiving and delaying the true and complimentary row address data for a predetermined duration and for comparing the delayed row address data with the next successive row address data developed by the row address buffer so as to generate a control signal when such comparison is indicative of a change in row address due to a change in the row address information received by the row address buffer;

a clock generator coupled to the address transistion detector for generating a clock pulse in response to the control signal, and transistor means coupled to each pair of bit lines and to said clock generator for equilibrating

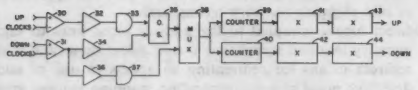
and precharging each pair of bit lines in response to the clock signal.

4,355,378

LOGGING SYSTEM DEPTH RECORDER

Charles L. Dennis, Dallas, and John W. Harrell, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,063
Int. Cl.³ G01V 1/40
U.S. Cl. 367—33 5 Claims



1. In a well logging system having a logging tool suspended in a borehole by means of a logging cable and an encoder for providing depth pulses in response to movement of the logging tool through the borehole, a system for converting depth pulses encoded in select formats into a common format suitable for use in the display of the depth of the logging tool in the borehole on a digital display device, comprising:

(a) a first detector to which said depth pulses are applied for converting any bi-phase encoded depth information into a first dual clock line formatted signal,

(b) a second detector to which said depth pulses are applied for converting any clock-line-plus-direction line encoded depth information into a second dual clock line formatted signal,

(c) a selector to which the outputs of said first and second detectors are applied for providing a selected output of one of said first and second dual clock line formatted signals,

(d) a first counter for counting up depth pulses in the selected output from said selector,

(e) a second counter for counting down depth pulses in the selected output from said selector, and

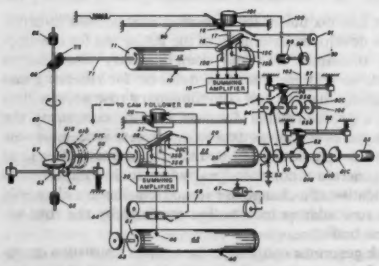
(f) means for applying said count of up depth pulses and said count of down depth pulses to said digital display device.

4,355,379

CONTINUOUS AUTOMATIC MIGRATION OF SEISMIC DATA WITH WAVEFORM PRESERVATION

John W. C. Sherwood, Whittier, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 410,058, Oct. 26, 1973, abandoned, Ser. No. 181,961, Sep. 29, 1971, abandoned, Ser. No. 28,197, Apr. 14, 1970, abandoned, and Ser. No. 768,149, Oct. 16, 1968, abandoned. This application Apr. 14, 1975, Ser. No. 567,458
Int. Cl.³ G01V 1/32, 1/34
U.S. Cl. 367—68 8 Claims



1. A system for converting a seismic time section consisting of a plurality of amplitude-versus-time seismic traces, into a seismic depth section consisting of a plurality of amplitude-versus-depth traces, so that events on the time section are migrated, both vertically and horizontally, into positions on said depth section corresponding to the actual spatial positions of the seismic reflectors in the subsurface, comprising:

(a) automated data processing means for sonogramming said amplitude-versus-time traces, a group of traces at a time, to produce a plurality of sonograms each identified, indexed and stored with a respective horizontal pivot coordinate of a respective group of sonogrammed amplitude-versus-time traces, and with a represented moveout,

(b) machine means for dividing each individual sonogram into a series of segments in accordance with a preselected seismic velocity function, and re-indexing and storing, also in accordance with said preselected velocity function, each of said series of segments into a particular storage zonelet representing a portion of said seismic depth section identified and indexed by a particular depth and horizontal coordinate, each of said series of divided and stored segments also being identified and indexed within a particular zonelet in accordance with a represented dip angle,

(c) machine means for automatically sonogramming said segments divided and stored within each of the zonelets to produce a final plurality of amplitude-versus-depth representations and

(d) machine means for directing and plotting the placement of said final representations on said seismic depth section, so that said seismic reflectors in said subsurface can be identified, in the vertical and horizontal location, by amplitude variations on said amplitude-versus-depth traces of said depth section.

4,355,380

ELECTRONIC TIMEPIECE WITH AUXILIARY DIGITAL DISPLAY

Freddy Huguenin, Lausanne, and Jean-Pierre Wattenhofer, Neuchatel, both of Switzerland, assignors to Ebauches, S.A., Switzerland

Filed Jun. 26, 1980, Ser. No. 163,277
Claims priority, application Switzerland, Jun. 28, 1979, 6028/79
Int. Cl.³ G04B 19/04, 25/00
U.S. Cl. 368—71 2 Claims

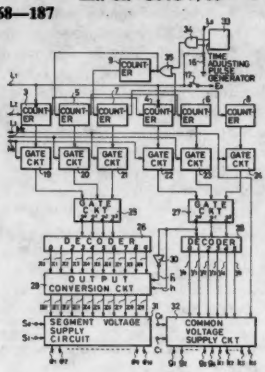
1. An electronic timepiece having a face and comprising an analog time display and a digital auxiliary display visible on said face, said analog time display and said digital auxiliary display being in superimposed relationship such that the analog time display can overlap a portion of the auxiliary display to obscure said portion, said auxiliary display comprising a plurality of digital display means disposed in three sectors of said face which each cover four hours of each half-day, control means for operating said analog time display for enabling time to be visibly indicated in an analog manner on the face of said timepiece and a control circuit for actuating and making fully visible at any given time of day at least one of said digital display means, said control circuit comprising a divider chain for supplying first and second signals when the minutes hand is

in two respective ones of said sectors and third and fourth signals when the hour hand is in two respective ones of the sectors and an auxiliary display section decoder which is supplied with said first, second, third and fourth signals and which produces selection signals for activating the displays of the three sectors respectively.

4,355,381
ELECTRONIC TIMEPIECE WITH ELECTRO-OPTIC DISPLAY

Masanori Fujita, and Yoshihito Owa, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed May 21, 1980, Ser. No. 152,025
Claims priority, application Japan, May 23, 1979, 54-64169
Int. Cl.³ G04C 9/00
U.S. Cl. 368—187 **4 Claims**



Vs-c / Vs		S0		S1	
Vc		3V0	0	V0	2V0
C0	0	3V0	-3V0	V0	-V0
C1	2V0	V0	-V0	-V0	V0

1. An electronic timepiece, comprising:

an optical display device having a number of separate display elements in the shape of time-indicating hands and including electrodes comprised of a number of segment electrodes in the shape of time-indicating hands arranged so as to extend radially from a point, and common electrodes formed in at least two concentric rings and divided into sector-like electrodes each of which opposes a group of an equal number of the segment electrodes, means defining circuit paths connecting a corresponding segment electrode in each of the groups without crossing one another, and optical display material between the segment electrodes and the common electrodes;

a clock pulse generator for generating clock pulses;

time counting means receptive of the clock pulses for counting time and generating time data;

selection means connected to receive the time data for time-divisionally selecting therefrom time units representative of time and for providing selected outputs of time units representative of time;

first means including a first voltage supply circuit for developing and applying pulse signals to the segment electrodes of the display elements for turning ON selected ones of the segment electrodes in response to one output of time units selected at the same time by the selection means and for developing and applying pulse signals to the remaining non-selected ones of the segment electrodes for turning OFF the remaining segment electrodes;

second means including a second voltage supply circuit for developing and applying pulse signals to the common electrodes of the display elements for turning ON selected ones of the common electrodes in response to another output of time units selected at the same time by the selection means and for applying pulse signals to the remaining non-selected ones of the common electrodes for turning OFF the remaining common electrodes; and

time adjusting means for setting the time counting means in a time-adjustment mode and for applying time adjusting pulse signals to the time counting means when the same is in the time-adjustment mode for adjusting the contents of the time counting means, the time adjusting pulse signals being applied for a longer effective period during time adjustment than the period of the pulse signals applied to the electrodes when no time adjustment is being made.

4,355,382
APPARATUS FOR SHARPENING A CUTTING STYLUS

Anil R. Dholakia, East Windsor, N.J., and Charles J. Buiocchi, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,091
Int. Cl.³ C23C 15/00; B24C 1/04; G11B 3/00
U.S. Cl. 369—71 **3 Claims**

1. A method for sharpening a cutting stylus for use in cutting geometric variations representing video signal information in a metal substrate, said method including the steps of:

affixing said cutting stylus to a masking block, said cutting stylus being affixed to said masking block such that a first given portion of said cutting stylus is shielded from a beam of high energy particles during a subsequent irradiation step;

providing a beam of high energy particles, said beam of high energy particles having a cross-sectional area perpendicular to the longitudinal axis of said beam that is large compared to a second given portion of said cutting stylus;

positioning said cutting stylus affixed to said masking block in the path of said beam of high energy particles such that said first given portion of said cutting stylus is shielded from said beam of high energy particles; and

irradiating said cutting stylus affixed to said masking block for a period of time sufficient to remove said second given portion of said stylus whereby said cutting stylus is sharpened.

4,355,383
APPARATUS FOR SCANNING VARIABLE AREA OPTICAL SOUND TRACKS BY PARALLEL PROCESSING DISCRETE PHOTOSENSOR OUTPUTS

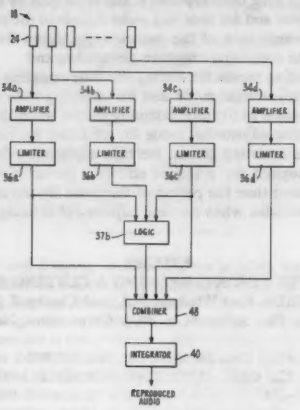
Ray M. Dolby, San Francisco, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation of Ser. No. 803,042, Jun. 3, 1977, abandoned. This application May 28, 1980, Ser. No. 154,074
Int. Cl.³ G11B 7/00, 7/12
U.S. Cl. 369—120 **4 Claims**

1. A scanning system for reproducing a variable area optical sound track comprising

means for illuminating a substantial width of the sound track,

a linear array of photoreceptor means disposed relative to the sound track from said illuminating means for generating analog electrical signals in response to the level of illumination received at each of said photoreceptor means from a respective small fractional portion of the sound track,



means for simultaneously processing in parallel said electrical signals, and including means for limiting each of said electrical signals, and

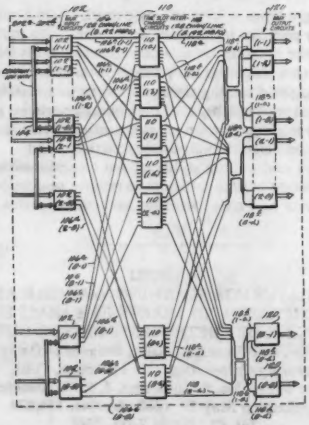
means receiving in parallel said simultaneously processed electrical signals for simultaneously combining said processed electrical signals to generate an audio signal.

4,355,384

NON-BLOCKING EXPANDABLE SWITCHING MATRIX FOR A TELECOMMUNICATION SYSTEM

Roland E. Genter, Falls Church, Va., and Steven R. Cook, Columbia, Md., assignors to Digital Switch Corporation, Reston, Va.

Filed Mar. 19, 1980, Ser. No. 131,862
Int. Cl.³ H04Q *11/04;* H04J *3/12*
U.S. Cl. 370—64 **23 Claims**



1. A digital switching system for selectively effecting communication between respective designated ones of a plurality of information channels; said digital switching system operating on a plurality of input data lines and corresponding output data lines, each input data line and corresponding output data line having a respective group of channels associated therewith, said group of associated channels being time division multiplexed onto said associated input data line to provide on said associated input data line sequential bytes of binary data occurring in sequential time slots, each of said time slots being associated with a respective particular channel of said group of channels; said digital switching system selectively providing on said corresponding output data line sequential bytes of binary data occurring in sequential time slots associated with the respective particular channels of said associated group of channels, said digital switching system comprising:

multiplexing input circuit means, coupled to said plurality of input data lines; and having a plurality of companionway lines associated therewith, for time compressing the data bytes from said plurality of input data lines and time division multiplexing said time compressed data bytes onto said associated companionway lines to provide on said companionway lines sequential time compressed data bytes occurring during successive compressed time slots,

said multiplexing input circuit means additionally having at least one inway junctor line associated therewith and further including means for selectively coupling designated ones of said companionway lines to said inway junctor line during respective compressed time slots;

time slot interchange means, coupled to said inway junctor line and having at least one outway junctor line associated therewith, for providing said time compressed data bytes on said associated outway junctor line in a controllable designated sequence different from the sequence of said time compressed data bytes on said inway junctor line; and

demultiplexing output circuit means, coupled to said outway junctor, for time expanding said differently sequenced compressed data bytes and time demultiplexing said time expanded data bytes onto respective ones of said associated group of output data lines;

said output circuit means further including means for storing an indicia of at least one predeterined message; and

means for designating said means for storing indicia as an alternative to designating one of said outway junctor lines, and for generating said predetermined message onto said output line.

4,355,385

MULTIPLEX INFORMATION HANDLING SYSTEM

Michael J. Hampshire, Liversedge, and Jonathan H. Williamson, Clifton, both of England, assignors to Ward & Goldstone Limited, Salford, England

Filed Jan. 30, 1980, Ser. No. 116,997
Claims priority, application United Kingdom, Feb. 1, 1979, 7903489; Jul. 6, 1979, 7923618
Int. Cl.³ H04J *3/02;* H04B *3/02*
U.S. Cl. 370—85 **10 Claims**

1. A multiplex information handling system comprising:

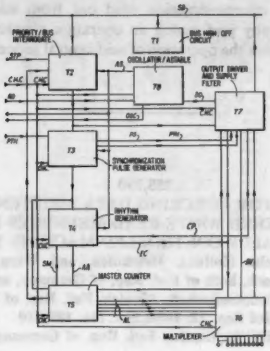
a plurality of transmitters and a plurality of receivers, all interconneted by a signal bus and by a power bus;

pieces of control equipment associated with the transmitters and receivers, and responsive to signals received by an associated receiver along the signal bus; and

signal priority establishing means for establishing a priority among the signals transmitted over and received from the signal bus;

wherein the transmitters transmit said signals along the signal bus, said signals being representative of the operational state of at least one of associated control equipment and pieces of equipment controlled by the control equipment, each said transmitter normally being operative to transmit periodically and after detecting a first predetermined time period of quiet conditions on the signal bus, and at least one of the transmitters being additionaly oper-

ative in a priority mode under control of the signal priority establishing means to transmit after detecting quiet



conditions on the signal bus for a second predetermined time period less than the first predetermined time period.

4,355,386
TIME-DIVISION MULTIPLEX DIGITAL SWITCHING NETWORK FOR A PCM TELEPHONE EXCHANGE SYSTEM UTILIZING DUPLICATE CONNECTING FIELD INSTALLATIONS

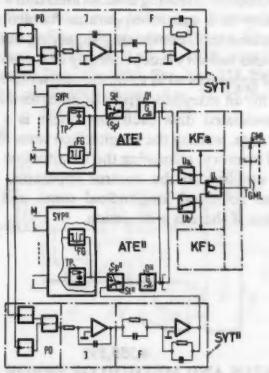
Reiner Binz, and Otto Karl, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,412

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1977, 2737713

Int. Cl.³ H04J *3/06, 3/14*

U.S. Cl. 370—100 **7 Claims**



1. A time-division multiplex digital switching system, particularly a PCM-telephone exchange system comprising switching network installations (KFa, KFb) provided in duplicate operating in parallel with one another for interference-free operation, and each assuming approximately half the traffic flow, respectively, characterized in that there is provided, in duplicate, exchange clock pulse frequency generating apparatus ATE (ATE', ATE'') supplying the switching networks (KFa, KFb) and the lines emanating from the latter with an exchange clock pulse determined in bit-frequency, whereby the particular one of the two exchange clock pulse frequency generating apparatuses ATE', supplies the particular one of such doubly-provided switching network installation (KFa), as well as the line (GML) from the exchange system, with an exchange clock pulse generated by it independently of the particular other exchange clock pulse apparatus (ATE''), and whereby the particular other of the two exchange clock pulse generating apparatuses (ATE'') supplies the other of such doubly-provided switching network installations (KFb) with an exchange clock pulse which is phase-locked with the exchange clock pulse supplied by the exchange clock pulse from generating apparatus (ATE').

4,355,387
RESYNCHRONIZING CIRCUIT FOR TIME DIVISION MULTIPLEX SYSTEM

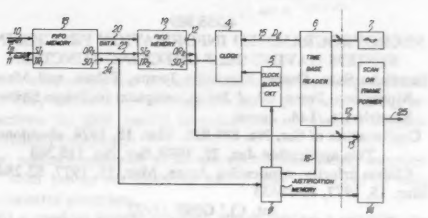
Jean-Francois Portejoie, 46, rue de Lorraine; Gilbert Noel, Kergarant Brevelenez, and Jean-Claude Billy, 33, Residence Duroux, all of 22300 Lannion, France

Filed Feb. 14, 1980, Ser. No. 121,420

Claims priority, application France, Feb. 21, 1979, 79 05109

Int. Cl.³ H04J *3/07*

U.S. Cl. 370—102 **9 Claims**



INVENTIVE SYNCHRONIZATION CIRCUIT FOR ONE INPUT CHANNEL

1. A multiplexing input circuit for ensuring the synchronization of plesiochronous numerical signals responsive to a "justification" principle, said circuit comprising means for generating a "justification" request signal responsive to a detection of a need for retiming said plesiochronous signals, buffer memory means having independently writing and reading capabilities for receiving signals at one clocking rate, and retransmitting said signals at a different clocking rate, said buffer memory being formed of two FiFo memory means connected in series, and means selectively responsive to the electrical state on the series connection between the first and second FiFo memories for causing the generation of a request for "justification" signals.

4,355,388
MICROPROGRAMMABLE TDMA TERMINAL CONTROLLER

Joseph H. Deal, Jr., Clarksburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,619

Int. Cl.³ H04J *3/04, 3/06*

U.S. Cl. 370—104 **32 Claims**

1. In a time division multiple access (TDMA) terminal operable between at least a terrestrial interface module (TIM) and a modem, a microprogrammable TDMA terminal controller comprising:

a microprogrammed random access memory (RAM) controller means for generating control signals to effect burst processing and data path control functions;

computer means for monitoring the operation of said terminal and providing data and control signals to said terminal to maintain desired terminal operation;

transmit means responsive to control signals from both said RAM controller and said computer for receiving data from said TIM, forming said data into a TDMA transmit burst and forwarding said burst to said modem;

receive means responsive to control signals from both said RAM controller and said computer for receiving demodulated bursts from said modem, deriving received data from said demodulated bursts and forwarding said data to said TIM; and

clock means for providing a source of timing pulses to said terminal controller.

4,355,389

MICROPROGRAMMED INFORMATION PROCESSING SYSTEM HAVING SELF-CHECKING FUNCTION

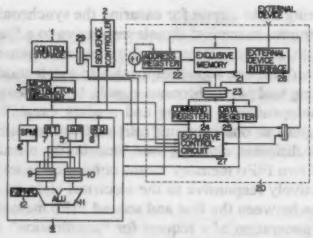
Fumitaka Sato, Oume; Masahiko Iwane, Tokyo, and Masaki Murayama, Fussa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 886,828, Mar. 15, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,368

Claims priority, application Japan, Mar. 15, 1977, 52-28432; Mar. 15, 1977, 52-28433

Int. Cl.³ G06F *11/22*

U.S. Cl. 371—18 **16 Claims**



1. A microprogrammed information processing system having a self-checking function comprising:

a central processing unit including means for executing microinstructions and having a control store for storing a microprogram including a sequence of microinstructions, said central processing unit further including means for periodically placing said unit in an idle state;

microinstruction register means included in said central processing unit and connected to said control store for storing microinstructions read out from said control store;

an exclusive fault test memory for exclusively storing commands which include addresses of microinstructions stored in said control store, the microinstructions addressed by said commands being selected under control of said commands to perform fault testing routines in said system; and

a fault test control circuit connected to said control store and said exclusive fault test memory and operable under control of said microinstruction execution means in said central processing unit, said fault test control circuit having means for reading out said commands from said exclusive fault test memory when said central processing unit is in said idle state and means for interpreting and executing the commands read out from said exclusive fault test memory, said fault test control circuit addressing said control store in response to said commands from said exclusive fault test memory causing said central processing unit to execute at least one microinstruction read out from said control store, thereby performing an operation checking procedure to check the operation of said central processing unit.

4,355,390

METHOD FOR CHECKING DATA WRITTEN INTO BUFFERED WRITE-READ MEMORIES IN NUMERICALLY CONTROLLED MACHINE TOOLS

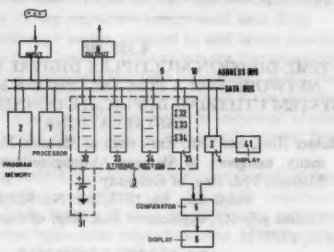
Friedrich-Wilhelm Hellwig, Hemhofen, and Werner Schrei, Kleinsendelbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,110

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939461

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—21 **2 Claims**



1. A method for checking data written into a buffered write-read memory in a control apparatus for a numerically controlled machine tool, comprising supplying buffered power to the write-read memory independently of the power supplied to the control apparatus so as to enable the write-read memory to store data for an extended period of time, forming longitudinal sums of associated data each time there is a change in the associated data, writing the longitudinal sums into the buffered write-read memory, reforming the longitudinal sums each time power is supplied to the control apparatus, comparing the formed and reformed longitudinal sums, and indicating the affected data if there is a deviation.

4,355,391

APPARATUS AND METHOD OF ERROR DETECTION AND/OR CORRECTION IN A DATA SET

John H. Alsop, IV, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1980, Ser. No. 136,128

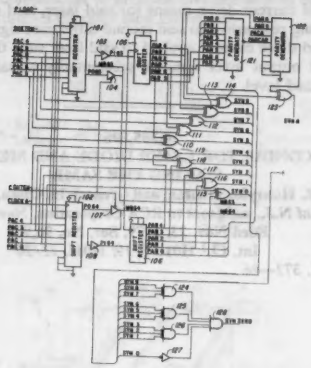
Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **29 Claims**

1. Apparatus for generating a binary code word in response to an input binary word, comprising:

(a) matrix generating means comprising a memory for storing and for supplying a matrix of columns and rows of bits set to binary "1"s and "0"s in a pattern conforming to the mathematical expression of a predetermined error detection and/or correction code algorithm; and

(b) matrix multiplying means connected to multiply the matrix by the input binary word to yield the binary code

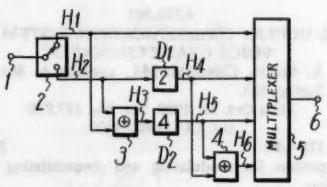


word indicative of an error detection and/or correction code.

4,355,392
BURST-ERROR CORRECTING SYSTEM

Toshitada Doi, Yokohama, and Akira Iga, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 31,030, Apr. 28, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,256
Claims priority, application Japan, Apr. 21, 1978, 53-47247
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—45 18 Claims



1. A digital signal transmission system comprising:

means for providing a first error correcting signal from generation elements comprised of a plurality of words of digital information;

delay means for relatively delaying said plurality of words of digital information so as to have delay times that are different from each other;

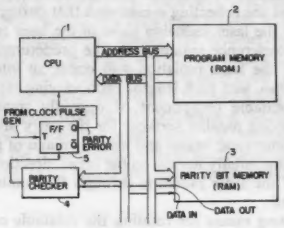
means for providing a second error correcting signal from a plurality of generation elements comprised of said relatively delayed words and first error correcting signal; and

means for transmitting said relatively delayed words of digital information and first and second error correcting signals.

4,355,393
MICROCOMPUTER HAVING A RAM FOR STORING PARITY BITS

Kazuyuki Kubo, and Shigenobu Katagiri, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,865
Claims priority, application Japan, Jan. 31, 1979, 54-10859
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—51 9 Claims



1. A microcomputer including a central processing unit and read only memory for storing a control program having instructions for said central processing unit, wherein the improvement comprises:

(a) means responsive to the microcomputer being supplied with power for deriving parity bits for words of said control program;

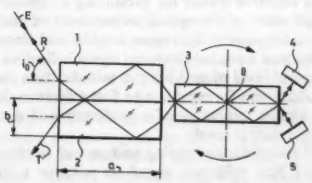
(b) a random access memory means having a segment responsive to the parity bit deriving means for storing only said derived parity bits; and

(c) means for parity checking each instruction word of said control program stored in said read only memory in combination with the parity bit for the corresponding word as stored in said random access memory.

4,355,394
LASER DEVICE FOR GENERATING ULTRASHORT LASER RADIATION PULSES

Fritz P. Schaefer, Goettingen, Fed. Rep. of Germany, and Jan Jasny, Warsaw, Poland, assignors to Max Planck Gesellschaft Zur Foerderung der Wissenschaften E.V., Goettingen, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,152
Int. Cl.³ H01S *3/11*
U.S. Cl. 372—16 11 Claims



1. A laser device for generating laser radiation pulses of predetermined wavelength, said laser device including at least two reflector arrangements which define a laser radiation path, and of which a first reflector arrangement is capable of substantially fully reflecting the laser radiation and a second reflector arrangement is partially transparent for the purpose of decoupling a portion of the laser radiation from said laser radiation path, the laser device also including a stimulatable laser medium arranged in the laser radiation path for emitting, when stimulated, a laser radiation pulse of the predetermined

wavelength which circulates in the laser radiation path, and stimulating means for stimulating said laser medium, wherein the first reflector arrangement is an interferometer which comprises:

a beam splitter located in the laser radiation path for producing two component beams;

a reflector means for reflecting the component beams back into the beam splitter; and

path lengths ratio varying means for varying the ratio of the lengths of the optical paths travelled by the respective component beams in passage between the beam splitter and the reflecting means such that during each circulation of the laser radiation pulse in the laser radiation path, an interference maximum at the predetermined wavelength of the laser radiation will occur an integral number of times, said path lengths ratio varying means including

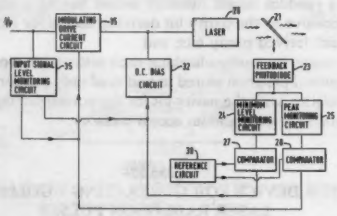
a rotatable component of optically transparent material having parallel surfaces for the entry and the exit of the component beams and having an axis of rotation which is substantially normal to the mean direction of propagation of the laser radiation through the rotatable component, and

rotating means for rotating the rotatable component about its axis at a predetermined speed of rotation.

4,355,395
INJECTION LASERS

Stuart R. Salter, and David R. Smith, both of Suffolk, England, assignors to British Telecommunications, London, England

Filed Apr. 10, 1978, Ser. No. 895,060
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—38 **4 Claims**



1. In combination with an injection laser having current supply means for supplying a d.c. bias current to the laser and current drive circuitry for supplying current pulses to said laser, apparatus for stabilizing the output characteristics, comprising:

light sensitive means for producing a first electrical signal indicative of the optical output level of said laser;

means for sensing the lowest level of said electrical signal to produce a second electrical signal indicative of the optical output level of said laser at said d.c. bias current;

second means for producing a first reference electrical signal which is indicative of a predetermined d.c. bias current light output level;

third means for comparing said second electrical signal with said first reference signal to produce a first difference signal;

means for feeding said first difference signal to said d.c. bias current supply means, said d.c. bias current supply means being responsive to said first difference signal to adjust the d.c. bias level such that the d.c. light output level remains substantially at the predetermined level;

fourth means for sensing a preselected level of the first electrical signal to produce a third electrical signal indicative of a preselected light output level of said laser;

fifth means for producing a second reference electrical signal indicative of a predetermined light output level;

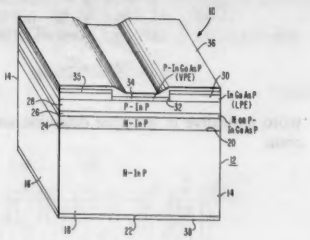
sixth means for comparing said third electrical signal with said second reference signal to produce a second difference signal; and

means for feeding said second difference signal to modulate said current drive means for said laser, said drive means being responsive to said second difference signal to adjust said drive current applied to said laser such that the optical output level remains substantially at said predetermined level.

4,355,396
SEMICONDUCTOR LASER DIODE AND METHOD OF MAKING THE SAME

Frank Z. Hawrylo, Trenton, and Gregory H. Olsen, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,975
Int. Cl.³ H01S *3/19*; H01L *21/20*
U.S. Cl. 372—46 **9 Claims**



1. In a semiconductor laser diode which includes

a body of semiconductor material including an active layer between confinement layers of opposite conductivity type,

a capping layer over one of said confinement layers, said capping layer having a stripe-like opening therethrough, and

a contact layer in said opening in said capping layer and contacting the one confinement layer, the improvement comprising

said capping layer and said contact layer being of the same material, the capping layer being a liquid phase epitaxy layer, the contact layer being a vapor phase epitaxy layer.

4,355,397
FULL DUPLEX COMMUNICATION SYSTEM FOR VOICE GRADE CHANNELS

Richard L. Stuart, Columbia, Md., assignor to Rixon, Inc., Silver Spring, Md.

Filed Oct. 15, 1980, Ser. No. 197,038
Int. Cl.³ H04L *3/00*
U.S. Cl. 375—17 **35 Claims**

1. Apparatus for modulating and demodulating a signal comprising:

transmitter means comprising:

means for splitting a series of input binary data bits into an even bit stream and an odd bit stream;

means for converting said binary data bit streams into respective streams of multi-level encoded data characters;

means for modulating one of said multi-level encoded data character streams by an in-phase carrier signal;

means for modulating the other said multi-level encoded data character stream by a quadrature carrier signal; and

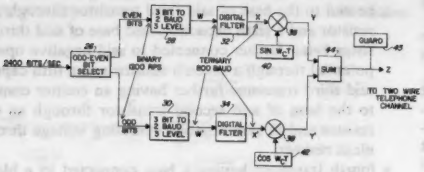
means for summing said modulated carrier signals to produce a multi-level quadrature amplitude modulated output signal; and

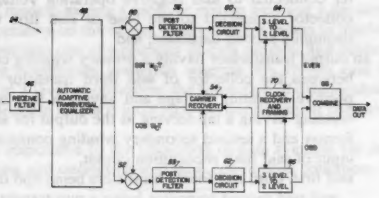
receiver means comprising:

means for splitting a received multi-level quadrature am-

plitude modulated signal into n-phase and quadrature components;

means for demodulating said in-phase and quadrature signal components to produce first and second streams of multi-level encoded data characters;





means for decoding said first and second streams of multi-level characters into respective streams of binary data bits; and

means for combining said binary data bit streams to produce an output data bit stream representative of the information borne by said multi-level quadrature amplitude modulated signal.

4,355,398

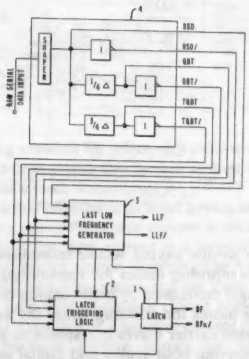
REAL TIME CLOCK RECOVERY CIRCUIT

Donald M. Cook, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 17, 1980, Ser. No. 217,339

Int. Cl.³ H04L *7/02*

U.S. Cl. 375—110 **14 Claims**



1. A clock recovery circuit, having an input terminal adapted to receive a serial data stream having a defined bit time, said serial data stream being the resultant combination of a data signal and a clock signal, said clock recovery circuit comprising:

(a) means for deriving a shaped serial data stream from said serial data stream thereby providing a first input signal;

(b) first means for shifting said first input signal by one-quarter bit time thereby providing a second input signal;

(c) second means for shifting said first input signal by three-quarters of a bit time thereby providing a third input signal;

(d) a latch, having an output terminal for providing an output signal; and

(e) means for operating said latch, said means for operating having a first, second, and third input terminal adapted to receive said first, second, and third input signal, respectively, and further having a fourth, fifth, and sixth input terminal adapted to receive the respective complement signals of the first, second, and third input signals, wherein the respective complement signals are symmetrical in time, said means for operating operatively connected to said first, second, third, fourth, fifth, and sixth input terminals and to said latch, said means for operating generating a trigger signal upon detection of a transition in the second input signal and in the third input signal, thereby causing a transition in the output signal of said latch, said output signal being the clock signal recovered from said serial data stream.

4,355,399

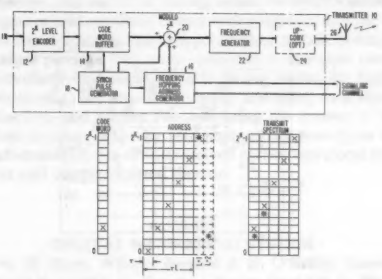
ADAPTIVE SPREAD SPECTRUM FH-MFSK TRANSMITTER AND RECEIVER

Uzi Timor, Haifa, Israel, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 23, 1981, Ser. No. 237,540

Int. Cl.³ H04J *6/00;* **H04B** *7/12*

U.S. Cl. 375—1 **15 Claims**



1. A transmitter for use in a spread spectrum radio system for generating a frequency-hopping, multilevel frequency shift keyed (FH-MFSK) signal in a predetermined frequency band, the transmitter comprising:

a Q level encoder (12) capable of converting either a periodic sample of an analog message signal or a group of K sequential message bits of a binary signal to be transmitted into an equivalent level of a Q level code and generating an output signal indicative of such equivalent level;

a frequency-hopping address generating means (16) capable of appropriately generating, as an output signal, signals representative of the individual multiple elements of a predetermined length frequency-hopping address sequence which is associated with a particular user of the system whose message signals were converted by the Q level encoder;

adding means (20) capable of adding the output signal of the Q level encoder and each of the individual multiple elements in the output signal of the frequency-hopping address generating means and generating an output signal indicative of such addition; and

frequency generating means (22) capable of transmitting the output signals of the adding means within the appropriate time slots and at corresponding ones of at least Q encoded

frequencies within the radio system's predetermined frequency band

characterized in that

the address generating means (16) comprises:

storage means (58) capable of storing the individual multiple elements of the predetermined length frequency-hopping address sequence for a user, the sequence comprising at least L signals where L is the normal length of a system encoded transmitted sequence; and

processing means (56) capable of transmitting the multiple elements of the frequency-hopping address sequence in a predetermined sequence to the adding means; and

the frequency generating means is responsive to the output signals from the adding means for causing, during a predetermined at least one time slot of the transmitting sequence, the simultaneous transmission of the resultant signal of the addition in said adding means of the Q level encoded signal and at least two elements of the frequency-hopping address sequence in corresponding encoded frequencies within the predetermined frequency band of the system.

4,355,400

TRANSMITTING AMPLIFIER FOR A REMOTE FED INTERMEDIATE REGENERATOR

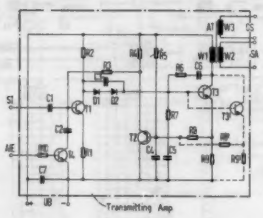
Josef Doemer, Hohenschaeftlarn, and Gerhard Thanhaeuser, Mering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,300

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017476

Int. Cl.³ H04L *25/64;* H03K *5/01*

U.S. Cl. 375—4 **2 Claims**



1. In a remote fed intermediate regenerator for use in the transmission of digital signals said intermediate regenerator having for each transmission direction at least one pulse regenerator comprising a distortion correction means and a regenerator circuit connected in series, each regenerator being preceded by a first remote feed dividing filter and followed by a second remote feed dividing filter and each pulse generator including a high power Zener diode bridging the remote feed path of said regenerator and said distortion correcting means and said regenerator circuit each containing low power Zener diodes connected in parallel with the operating voltage terminals thereof, and a fault recognition circuit interconnected between the pulse regenerators, a transmitting amplifier for each pulse regenerator connected in series with said distortion correcting means and said regenerator circuit in said remote feed path, said transmitting amplifier comprising:

a first transistor having a base connected to a signal input of said transmitting amplifier through a first capacitor and having an emitter connected through a first resistor to a negative operating voltage and having a collector connected through a second resistor to a positive operating voltage;

a second transistor having an emitter connected to the base of said first transistor through a third resistor and to said positive operating voltage through a fourth resistor, and having a collector connected to said negative operating voltage and having a base connected through an adjustable fifth resistor to said positive operating voltage and through a fourth capacitor to said negative operating voltage;

a third transistor having a base connected to the collector of said first transistor through a diode series arrangement, said diode series arrangement being bridged by a third capacitor, said third transistor having a collector connected to the base of said third transistor through a sixth resistor and a sixth capacitor, said base of said third transistor being further connected to said negative operating potential through a seventh resistor and a fifth capacitor, said third transistor further having an emitter connected to the base of said second transistor through an eighth resistor and to said negative operating voltage through a ninth resistor;

a fourth transistor having a base connected to a blanking pulse voltage through a tenth resistor and having an emitter connected to said negative operating voltage and a collector connected to the base of said first transistor through a second capacitor; and

an output transformer having a primary winding connected between the collector of said third transistor and said positive operating voltage and having a first secondary winding having a tap serving as the output for said transformer and a second secondary winding connected to an input of said fault recognition circuit,

said first, third and fourth transistors being npn transistors and said second transistor being a pnp transistor.

4,355,401

RADIO TRANSMITTER/RECEIVER FOR DIGITAL AND ANALOG COMMUNICATIONS SYSTEM

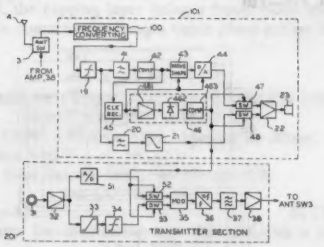
Masao Ikoma; Noboru Saegusa; Yoshihiko Akaiwa, and Ichirou Takase, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,154

Claims priority, application Japan, Sep. 28, 1979, 54-124951

Int. Cl.³ H04M *1/70*

U.S. Cl. 375—5 **5 Claims**



3. A radio device having secure transmission capabilities, said device comprising means for transmitting carrier waves which are angle modulated by either analog or digital signals; first selecting means for selecting either the analog or digital angle modulated carrier waves in response to a control signal; means for receiving both analog and digital angle modulated carrier waves and demodulating them to provide demodulated analog or digital signals, respectively;

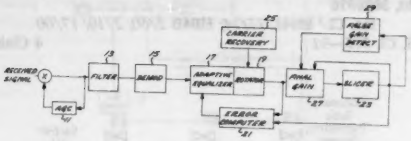
means for regenerating a clock signal from the output of said receiving means;

analog-digital decision means responsive to said clock signals for generating said control signal, and second selecting means responsive to said control signal for selecting either said demodulated analog or digital signals.

4,355,402
DATA MODEM FALSE EQUILIBRIUM CIRCUIT

Philip F. Kromer, III; Ran F. Chiu; Ming L. Kao, all of Miami, and Henry H. Parrish, Miami Springs, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Oct. 19, 1978, Ser. No. 952,856
Int. Cl.³ H04L 27/08
U.S. Cl. 375—11 10 Claims



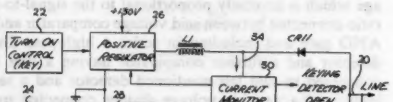
8. In a modem having a receiver system gain and a decision means operative on the output of an equalizer means to resolve said output into one of a plurality of data symbols and subject to a false equilibrium condition wherein the system gain is reduced to a level of operation, the resolution of data symbols by said decision means is incorrect, the improvement comprising:

means responsive to the resolution of data symbols for detecting and correcting said false equilibrium condition.

4,355,403
TELETYPEWRITER LINE KEYER WITH SWITCHING CURRENT REGULATOR

John W. Spaniol, Studio City; Ronald E. Tollum, Simi Valley, both of Calif., and Julius A. Barthelme, Woodsboro, Md., assignors to Frederick Electronics Corporation, Frederick, Md.

Continuation of Ser. No. 909,653, May 25, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,652
Int. Cl.³ G05F 1/40; H03K 1/14
U.S. Cl. 375—36 18 Claims



1. A switching network for selectively delivering an average current from either a negative power source or a positive power source to a load, comprising:

(a) switching means responsive to input keying control signals for connecting one of the power sources to the load, the load current forming the loop current in a loop which includes the connected power source supplying the loop current, a portion of said switching means and the load;

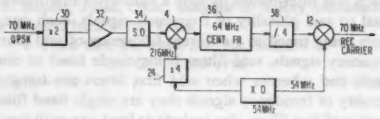
(b) a floating, loop current-sensing circuit responsive to the level of either a positive or a negative current in the load, for generating feedback control signals for operating said switching means to disconnect a connected power source from the load, the feedback control signals cooperating with the input keying control signals to control the connection and disconnection of a power source, said floating circuit developing its operating power voltages from the loop current itself; and

(c) an energy storage circuit connected between said switching means and the load, for storing energy when either of the power sources is connected to the load, and for supplying stored energy to the load when the connected power source is disconnected.

4,355,404
CARRIER RECOVERY NETWORK FOR QPSK MODEMS EMPLOYING SYNCHRONIZED OSCILLATORS

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,289
Int. Cl.³ H03B 5/12; H03D 7/16
U.S. Cl. 375—86 31 Claims



1. A carrier recovery network for recovering a pure carrier waveform from a received carrier waveform having information modulated thereon, said carrier recovery network comprising:

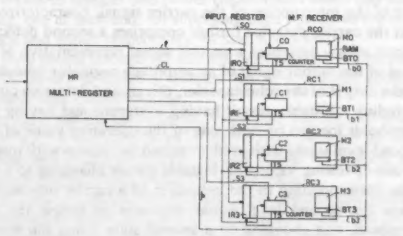
first processing means for processing said received carrier waveform according to a first function in order to remove said information modulation therefrom to provide a processed output; and

an oscillator having (a) an oscillator input receiving said processed output of said first processing means and (b) an oscillator output having said pure carrier waveform thereon, said oscillator having means for synchronizing a signal at said oscillator output with a signal at said oscillator input whereby frequency variations in said processed output produce frequency variations in said pure carrier waveform, said oscillator also having means for further processing said processed output according to a second function, said second function being the inverse of said first function, whereby said pure carrier waveform is a substantial replica of said received carrier waveform without said data modulated thereon.

4,355,405
DIGITAL SIGNALLING SYSTEM

Willi A. H. Ruys, Wilrijk; Dermod J. K. O'Reilly, Antwerp; Leopold P. Verbist, St. Katelijne Waver; Daniel S. G. Hoefkens, Berchem, and Guido M. J. B. Thyssens, Boechout, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,055
Claims priority, application Netherlands, Apr. 27, 1979, 7903346
Int. Cl.³ H04J 5/06
U.S. Cl. 375—48 35 Claims



1. Digital signalling system for multifrequency signalling and transmission of signals in digital form in channels grouped in successive frames including sender means which are coupled

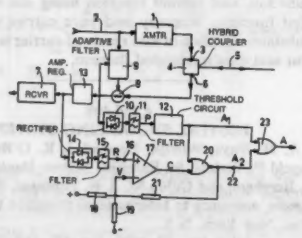
to receiver means via transmission means and which are adapted to generate at least one frequency signal, said receiver means being adapted to recognize the presence of said frequency signal received and being provided with guard means to protect said receiver means against the reception of spurious signals, the invention wherein said receiver means includes filter means including at least one multiple band digital filter, a number of the bands of the multiple bands filtered being used as guard bands to form said guard means in which said sender means generate combinations of frequency signals out of a plurality of frequency signals and that said receiver means are adapted to recognize the presence of said combinations in which said filter means include a number of first filters at least equal to said plurality of frequency signals, each one of said filters being tuned to a different frequency of said plurality of frequency signals, said filters being single band or multiband filters, and wherein when said first filters are tuned to said plurality of frequency signals they are single band filters, said number of first filters also include at least one multiband guard filter, each pass band of which is situated between two different succeeding frequencies of said plurality of frequency signals.

4,355,406

CARRIER DETECTOR IN A MODEM PROVIDED WITH AN ECHO CANCELER

Loïc B. Y. Guidoux, Massy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,161
Claims priority, application France, Nov. 7, 1979, 79 27479
Int. Cl.³ H04B 3/20
U.S. Cl. 375—82 2 Claims



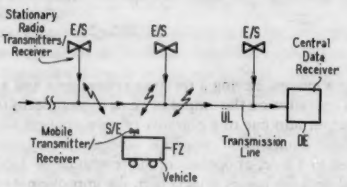
1. A carrier detector in a modem provided with an echo canceler, the carrier detector comprising a first detection circuit which, in processing a signal representative of the level of the output signal of the echo canceler, produces a signal indicative of the interruption of the carrier signal, characterized in that the carrier detector further comprises a second detection circuit which processes a second signal representative of the level of the output signal of an amplitude regulator connected to the output of the echo canceler, this second detection circuit including a bistable circuit having hysteresis and having two thresholds located on both side of the operating value of said second level signal with predetermined deviations with respect to this operating value, this bistable circuit changing to a first state corresponding to the indication of a carrier interruption when the second level signal decreases to below the low threshold, and changing to a second state when the second level signal increases to above the high threshold or when the first detection circuit furnishes the indication of a carrier interruption, the indication of a carrier interruption at the output of the carrier detector being produced by the first or the second detection circuit.

4,355,407

DEVICE FOR DISCONNECTING THE RECEIVER IN CASE OF A SMALL SIGNAL-TO-NOISE RATIO FOR A DIGITAL-MODULATED RADIO SYSTEM

Friedrich Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,572
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008076
Int. Cl.³ H04L 27/14; H04B 3/60, 1/10, 17/00
U.S. Cl. 375—91 4 Claims



1. Apparatus for disconnecting a receiver in response to a small signal-to-noise ratio in a digital modulated radio system, comprising:

a receiving mixer operable to receive a transmitted radio signal and convert the same to an intermediate frequency;

a frequency shift keyed demodulator comprising an input coupled to said mixer, two channels each including in series a band-pass filter connected to said input, an amplifier and a detector, and a voltage comparator connected to said detectors and operable to be switched at a frequency which increases with decreasing signal-to-noise ratio;

an AND gate;

connecting means connecting said voltage comparator to said AND gate; and

frequency-to-voltage conversion means for obtaining a voltage which is inversely proportional to the signal-to-noise ratio connected between said voltage comparator and said AND gate and including in series a high-pass filter, a detector and a further comparator having a first input connected to said last-mentioned detector and a second input, and a variable voltage divider connected to said second input for setting a minimum acceptable signal-to-noise ratio,

said AND gate operated to disconnect the receiver in response to signal-to-noise ratios less than the set minimum.

4,355,408

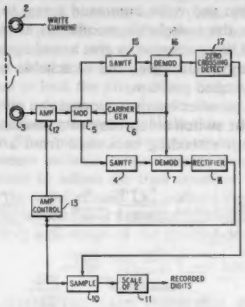
SYSTEM FOR EXTRACTING TIMING INFORMATION FROM A DIGITAL WAVEFORM

Gordon G. Scarrott, Welwyn Garden City, England, assignor to International Computers Limited, Stevenage, England

Filed Feb. 11, 1981, Ser. No. 233,451
Claims priority, application United Kingdom, Feb. 13, 1980, 8004793
Int. Cl.³ H04L 7/00
U.S. Cl. 375—110 10 Claims

6. Apparatus for extracting timing information from an original waveform representing digital information and composed of elementary signals, the apparatus comprising means for transforming the original waveform into a transformed waveform, which means comprises in sequence a modulator for modulating a carrier wave with the original waveform, a surface acoustic wave transversal filter for passing the modulated waveform and a demodulator for demodulating the filter output to produce said transformed waveform and means for detecting zero crossings of the demodulated signal and outputting timing signals in response thereto, the characteristics of

the surface acoustic wave transversal filter being such as in operation to transform an isolated elementary signal in the original waveform into an elementary transformed waveform



which has at least one zero crossing and is substantially zero at each instant at which a zero crossing of any other elementary transformed waveform can occur.

4,355,409

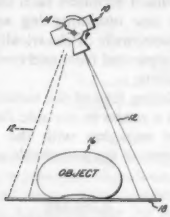
SCANNING X-RAY SYSTEM

Kurt Amplatz, 10 Evergreen Rd., St. Paul, Minn. 55110

Continuation of Ser. No. 71,184, Aug. 31, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,181

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—146 **18 Claims**



1. An x-ray apparatus for producing x-ray images of an object, the x-ray apparatus comprising:

x-ray sensitive means positioned on one side of the object for receiving x-rays which have passed through the object, the x-ray sensitive means defining a field over which x-rays are received, the field having a first dimension in a first direction and a second dimension in a second direction;

x-ray source means positioned on an opposite side of the object from the x-ray sensitive means for providing a narrow x-ray beam having a first dimension at the field defined by the x-ray sensitive means which is at least equal to the first dimension of the field having a second dimension at the field defined by the x-ray sensitive means which is less than the second dimension of the field and less than the first dimension of the narrow beam, the x-ray source means including an x-ray tube in which an electron stream from a cathode is directed along an anode-cathode axis to strike a focal spot on a target surface of an anode to produce x-rays, the target surface being inclined with respect to a first plane which (1) is perpendicular to the anode-cathode axis and (2) passes through the center of the focal spot; and

pivoting means for pivoting the x-ray source means about a pivot axis to cause the narrow x-ray beam to be scanned in the second direction across the field defined by the x-ray sensitive means to cover the second dimension of the field, wherein the pivot axis (1) passes exactly through the center of the focal spot, (2) is perpendicular to the anode-cathode axis, (3) lies in the first plane, (4) is parallel to the field defined by the x-ray sensitive means, and (5) is parallel to the first direction so that as the x-ray source means is pivoted by the pivoting means, the center of the focal spot remains stationary.

4,355,410

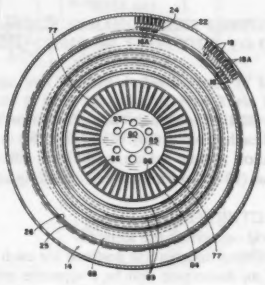
INDUSTRIAL X-RAY MACHINE

James R. Sullins, Tulsa, Okla., assignor to X-Ray Manufacturing & Supply, Inc., Tulsa, Okla.

Filed Oct. 27, 1980, Ser. No. 201,178

Int. Cl.³ H05G *1/02*

U.S. Cl. 378—199 **7 Claims**



1. A completely enclosed, self-contained, cooled, industrial X-ray machine having an improved X-ray tube, power supply and heat exchanger assembly, comprising:

(a) a cylindrical metallic housing of selected material, longer than said X-ray tube, a plurality of narrow longitudinal grooves with intervening narrow vanes, on the outside surface of said housing;

(b) a large plurality of narrow longitudinal grooves with intervening narrow vanes, on the outside surface; these internal and external vanes extending substantially the full length of said housing except for a portion of selected length intermediate the two ends, where said vanes are cut down to a thin-walled cylinder of selected thickness;

(c) a first thin-walled outer sleeve surrounding the outer edges of said outer vanes forming a plurality of external tubular longitudinal passageways along the outside surface of said housing, said outer sleeve extending from a first end of said housing almost to the second end, leaving a short length of said grooves uncovered;

(d) means to support two power transformers inside said housing, one at each end, for supplying high voltage to the cathode and anode respectively, of said X-ray tube;

(e) plate means to close off and seal both ends of said housing, and means to inject a selected gas at a selected pressure inside said closed housing;

(f) a conventional, commercial, X-ray tube, and support means for said X-ray tube inside of and concentric with an inner thin-walled cylindrical sleeve; and means to position said inner sleeve concentrically in said housing;

(g) internal fan means for circulating said selected gas inside of said inner sleeve past a first transformer, over said X-ray tube and past a second transformer, then through the annular space between said inner sleeve and said housing, back to said internal fan means;

(h) external fan means for blowing external air through said longitudinal passageways outside of said housing.

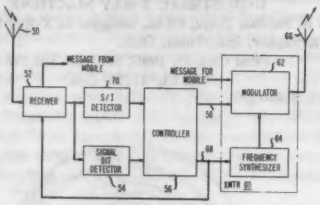
4,355,411
TECHNIQUE FOR EFFICIENT SPECTRUM UTILIZATION IN MOBILE RADIO SYSTEMS USING SPACE DIVERSITY

Douglas O. Reudink, Sea Girt, and Yu S. Yeh, Freehold, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 132,909, Mar. 24, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 276,255

Int. Cl.³ H04B *3/60, 7/06, 15/00*

U.S. Cl. 455—33 **11 Claims**



1. A method of communicating between a base station (30–40) and each of a plurality of mobiles (24) in a mobile radio communication system which is divided into a plurality of cellular areas (10–21) with each cell including at least one base station.

CHARACTERIZED IN THAT

the method comprises the steps of:

(a) transmitting information destined for each of the mobiles within an associated cell in a separate primary channel (C_p) of a plurality of primary channels within a first portion (f_m) of an overall system frequency spectrum when a mobile is not experiencing interference above a predetermined interference level from transmissions in corresponding primary channels in other cells of the system; and

(b) switching an individual mobile in said associated cell to a separate predetermined secondary channel (C_d) of a plurality of available secondary channels within a selected section (f_1, f_2, f_3) of a remaining second portion (f_i) of the overall system frequency spectrum when the individual mobile experiences interference from other cells above said predetermined interference level in its originally assigned primary channel, the selected section of the remaining second portion (f_i) of the overall system frequency spectrum being a different section of said remaining second portion than a selected section used for performing step (b) in a bordering sectional area of an adjacent cell of the plurality of cellular areas closest to said mobile.

4,355,412
PRESET STATION SELECTING DEVICE IN A RADIO RECEIVER

Yasushi Kawakami, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 8, 1980, Ser. No. 138,334

Claims priority, application Japan, Apr. 10, 1979, 54-46433[U]; Apr. 16, 1979, 54-49393[U]

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—175 **12 Claims**

1. In a radio receiver which is electrically tuned to a broadcasting frequency, a preset station selecting device comprising:

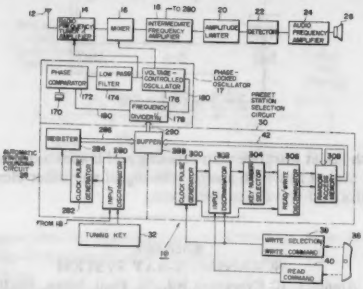
a memory;

means for previously writing a broadcasting frequency into the memory when it receives a write selection and write command signal;

means for reading the broadcasting frequency out of the memory and electrically setting this frequency in the receiver;

a switch including a switchable member which has two switched positions, the switch being adapted to give a write selection and write command signal to the writing means when the switchable member is at one switched position, and being adapted to give a read command signal to the reading means when the switchable member is at the other switched position;

the switchable member being supported at a pivotal point in the switch; the switch comprising two parallel electrically insulating legs extending backward from a back of the



switchable member, one on each side of the pivotal point, an insulating plate comprising thereon two separate groups of electrical contacts which are disposed so as to align with the two legs respectively, two electrically conductive contact members each disposed between and aligning with one insulating leg and a corresponding group of contacts made of electrically conductive rubber and normally separated from said corresponding group of electrical contacts;

one of said insulating legs of the switchable member being provided with a recess in one side thereof; and

a locking roller engaging with the recess at said one switched position of the switchable member.

4,355,413
PHASE LOCKED LOOP CIRCUIT

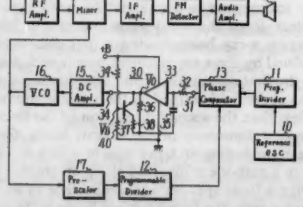
Tsutomu Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,740

Claims priority, application Japan, Dec. 10, 1979, 54-160086

Int. Cl.³ H04B *1/26;* **H03L** *7/18, 7/24*

U.S. Cl. 455—183 **14 Claims**



1. In a phase locked loop circuit comprising reference signal oscillator means providing a reference signal; voltage controlled oscillator means providing an output oscillation signal whose frequency varies in accordance with a DC control signal applied thereto; programmable divider means having an input connected to receive the output oscillation signal from

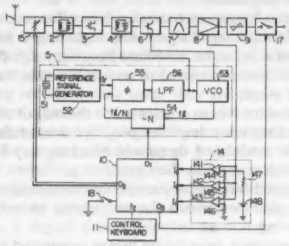
said voltage controlled oscillator means and an output providing a divided-down signal over a range; phase comparator means having inputs respectively coupled to receive said reference signal and said divided-down signal and an output providing an error signal in response to the phase difference therebetween; and low pass filter means coupled between said phase comparator means and said voltage controlled oscillator means and supplied with said error signal for producing said DC control signal to lock the phase of the output oscillation signal to that of the reference signal, and having a time constant circuit whose time constant establishes the transfer function of the low pass filter means; the improvement wherein said low pass filter means includes control means coupled to said time constant circuit to adjust the time constant thereof in accordance with the level of said DC control signal such that the low pass filter means has a damping factor that is substantially a constant over said range of the divided-down signal.

4,355,414

AUTOMATIC GAIN CONTROL SYSTEM

Shigeki Inoue, Toyokawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,095
Claims priority, application Japan, Sep. 19, 1979, 54-119405
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—184 **8 Claims**



1. In a radio receiver including tuning means, receiving means for receiving transmitted signals and for applying the received signals to said tuning means, control means connected to said tuning means for controlling the tuning frequency of said tuning means, level detector means connected to receive the signals passed by said tuning means for detecting whether those signals exceed a predetermined level and for supplying a resulting detection output signal to said control means, and gain control means responsive to said control means for controlling the level of said received signals;

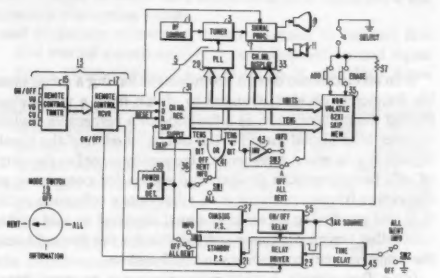
said control means including processing means connected to said tuning means, said level detector means and said gain control means for determining, when a desired broadcast frequency is received by said receiving system, whether there exists any other broadcast frequency which interferes with said desired broadcast frequency, program means connected to said processing means for controlling the operation thereof; memory means connected to said processing means for storing the result of the operations thereof, and a keyboard connected to said processing means for designating a desired receiving frequency (fs); said processing means including first generating means for generating a desired tuning control signal (No) corresponding to a desired receiving frequency (fs) and for storing the desired tuning control signal in said memory means when said desired receiving frequency (fs) is designated by way of said keyboard, second generating means for generating and successively applying to said tuning means a tuning control signal (N) corresponding to each frequency over the entire receiving band of said tuning means except for said desired receiving frequency (fs), means for determining on the basis of the output of said level detector means whether there exists an interference broadcasting wave in such a relation with said desired receiving frequency as to interfere with the same among the frequencies selected by said tuning control signal (N) and for applying a gain control signal to said gain control means to attenuate said received signals when there exists said interference broadcasting wave, and desired tuning control signal supply means responsive to completion of the operation of said interference broadcasting wave determining means for reading out the desired tuning control signal (No) stored in said memory means and for applying said signal (No) to said tuning means, thereby enabling the receipt of the desired receiving frequency (fs).

4,355,415

TUNING MODE ARRANGEMENT USEFUL FOR RESTRICTING CHANNEL SELECTION TO CERTAIN CHANNELS

John B. George, and William J. Testin, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 144,828
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—185 **10 Claims**



1. In a receiver, apparatus for tuning said receiver to various channels comprising:

channel number register means for storing coded groups of binary signals representing channel numbers of selected channels;

user operable channel selection means for selectively causing said channel number register means to change said binary signals in a given order when operated;

tuner means responsive to said binary signals for tuning said receiver to corresponding channels;

memory means including a plurality of memory locations addressed in response to said binary signals, each for storing at least one tuning control signal associated with the tuning of said receiver to a respective channel;

utilization means responsive to the tuning control signal stored in an addressed one of said memory locations for controlling said apparatus in a predetermined manner; and

mode selection means interposed between said channel number register means and said memory means in a first mode for selectively causing memory locations in a first group of said memory locations to be addressed in response to said binary signals when said binary signals represent channel numbers in a predetermined group of channel numbers and in a second mode for causing memory locations in a second group of memory locations to be addressed when said binary signals represent channel numbers in said same predetermined group in a second mode.

4,355,416

CIRCUIT ARRANGEMENT FOR THE SELECTION OF A FREQUENCY OF SIGNALS RECEIVABLE IN A RECEIVING SET

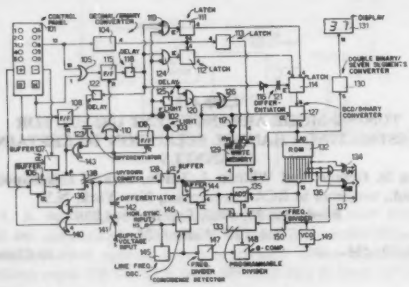
Mario Malerba, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Oct. 5, 1976, Ser. No. 729,757

Claims priority, application Italy, Oct. 16, 1975, 69579 A/75

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—186 **32 Claims**



1. In an electronic circuit arrangement having a programmable frequency divider arranged to obtain from a voltage controlled tuning oscillator, as a function of a respective dividing number N in digital form for the tuning of each of the tunable signals in a receiver, a respective frequency signal at the output of said programmable divider, and means for comparing said respective frequency signal with a frequency reference oscillation and producing a resultant signal supplied to said voltage controlled tuning oscillator and suitable for the desired tuning, the improvement comprising in combination:

(a) a first circuit having memory means to store binary coded number R arranged to provide said binary coded number R to said programmable divider, each number R forming at least a part of said number N;

(b) a control panel having at least ten numbered push buttons;

(c) first means actuable by at least one of said push buttons to form a binary coded number P indicative of a selected frequency to which said receiver is to be tuned by said voltage controlled tuning oscillator, said number P being transmitted to said first circuit to obtain therefrom a corresponding binary coded number R;

(d) second means for generating adjustment signals representative of incremental modifications of the numerical value of said number N;

(e) a second memory circuit;

(f) third means for storing in said second memory circuit said number P and said adjustment signals; and

(g) fourth means arranged to inhibit the transmission of said number P to said first circuit and to inhibit the transmission of said adjustment signals from said second means, and to transfer from said second memory circuit the number P to said first circuit and the adjustment signals stored in said second memory circuit to said programmable divider for modifying said number N, said fourth means including additional push buttons on said control panel for causing said second means to vary said adjustment signals and for controlling the actuation of said third means and said fourth means.

4,355,417

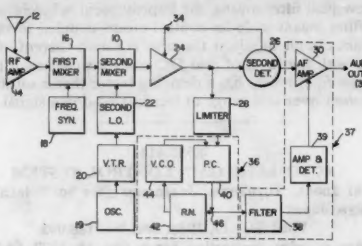
SQUELCH CONTROL CIRCUIT FOR AMPLITUDE MODULATED RF RECEIVERS

Joseph H. Kozak, Jr., 62 Bryan's Rd. Trailer Park, Bryan's Rd., Md. 20616

Continuation of Ser. No. 835,455, Sep. 22, 1977, abandoned. This application Apr. 17, 1980, Ser. No. 140,465

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—218 **8 Claims**



1. A squelch circuit for an amplitude modulated RF receiver, comprising:

(a) radio frequency receiving means for producing an amplitude modulated signal and including a mixing stage for producing an intermediate frequency signal and which has an output connected to an intermediate frequency amplifier stage,

(b) detector means connected to the output of the intermediate frequency amplifier stage for demodulating the amplitude modulated signal and blocking any FM component which may be in the signal,

(c) an audio frequency amplifier connected to the output of the detector means for amplifying its output signal and passing it to an output line,

(d) frequency modulation means connected to the output of the mixing stage for continuously impressing a frequency modulated signal at a preselected frequency value on the intermediate frequency signal,

(e) a phase locked loop circuit connected to the output of the intermediate frequency amplifier for locking onto the received frequency modulated signal and tracking it through its frequency changes, and

(f) means connected between the output of the phase locked loop and the audio frequency amplifier for gating the audio frequency amplifier off when the phase locked loop does not find the impressed frequency modulated signal.

4,355,418

Patent Not Issued For This Number

4,355,419

RADIO SIGNAL RECEIVING SYSTEM HAVING MEANS FOR SELECTIVELY COMBINING SIGNALS FROM A PLURALITY OF RECEIVING SECTIONS

Takashi Hiyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,876

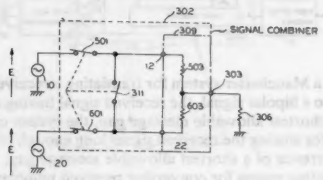
Claims priority, application Japan, May 14, 1979, 54-58906

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—303 **4 Claims**

1. A radio signal receiving system having first and second signal receiving section means for providing output signals having substantially equal amplitudes and a signal combiner means coupled directly to outputs of said receiving section means for combining the outputs thereof to provide a combined signal having a substantially constant voltage, said first

and second receiving section means being unbalanced with respect to ground, said signal combiner comprising: a first and a second input terminal means for respectively receiving the outputs of individually associated ones of said first and second receiving section means; circuit means having at least a set of first and second receiving terminals and an output terminal, said first and second receiving terminals being connected with two resistors in series, said output terminals being connected to the junction of said resistors; first switching means connected between said first input terminal and said first receiving terminal, second switching means coupled between said second input terminal and said second receiving terminal; third switching means connected between said first and second receiving terminals and interlocked to close when either one of



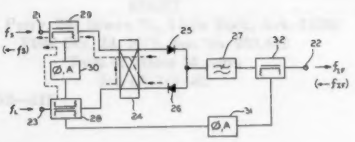
said first and second switching means opens; and means connected to said first and second input terminal means for controlling said first, second and third switching means so that said first and second switching means are closed and said third interlocked switching means is opened in a normal state representing those outputs which are derived from said first and second receiving section means when they are above any one of a predetermined signal-to-noise ratio, a predetermined signal level, and a predetermined pilot signal level and if either of said two outputs is driven out of said normal state, the one of said first and second switching means which receives a signal in the normal state remaining closed with said third switching means closing, while the one of said first and second switching means which receives a signal driven out of the normal state is opened.

4,355,420

FREQUENCY CONVERTER CAPABLE OF ELIMINATING LOCAL POWER LEAK

Hiroyuki Ishihara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,208
Claims priority, application Japan, Dec. 3, 1979, 54-155522
Int. Cl.³ H04B *1/26, 1/10*
U.S. Cl. 455—317 **13 Claims**



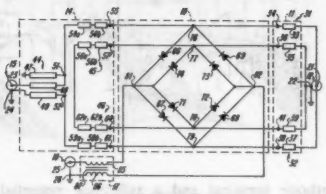
1. A frequency converter comprising first, second and third terminals respectively supplied with a first signal having a first frequency band, a local oscillation signal, and a second signal having a second frequency band; frequency mixing means for frequency-mixing said first signal and said local oscillation signal to generate said second signal; branching means coupled between said second terminal and said frequency mixing means, for branching part of said local oscillation signal to provide a branched local oscillation signal; coupling means, connected between said first terminal and said frequency mixing means, for supplying said branched local oscillation signal to said first terminal; and amplitude-phase adjusting means, connected between said branching means and said coupling means, for adjusting the phase and amplitude of said branched local oscillation signal so that said branched local oscillation signal and a leakage local oscillation signal which leaks from said frequency mixing means are equal in amplitude and reverse in phase with respect to each other at said first terminal.

4,355,421

BROADBAND MIXER WITH COPLANAR BALUN

Warren L. Seely, Aurora, Colo., assignor to Vari-L Company, Inc., Denver, Colo.

Filed Dec. 5, 1980, Ser. No. 213,204
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—327 **15 Claims**



1. In a broadband mixer having first, second and third balun means coupled between first, second and third signal ports and frequency converting means,

said frequency converting means arranged to convert first and second signals applied to said first and second signal ports, respectively, to a third signal at said third signal port,

said first balun means incuding first and second ground plane baluns juxtaposed to one another, each of said first and second ground plane baluns having a pair of opposed, spaced, strip conductors disposed in different planes,

said second balun means including third and fourth ground plane baluns juxtaposed to one another, each of said third and fourth ground plane baluns having a pair of opposed, spaced, strip conductors disposed in different planes,

the improvement wherein:

said second balun means includes a coplanar balun coupled between said second signal port and said third and fourth ground plane baluns, said coplanar balun having a center and two side coplanar strip conductors spaced from one another for converting an unbalanced input signal applied to said second signal port to two balanced output signals, one end of said center conductor having a first terminal, the other end of said center conductor being connected to an adjacent end of one of said side conductors having a second terminal, an end of said other side conductor adjacent said second terminal having a third terminal, the ends of said side conductors opposite said second and third terminals being connected to ground, said two balanced output signals appearing at said second and third terminals when said unbalanced input signal is applied to said first terminal.

4,355,422

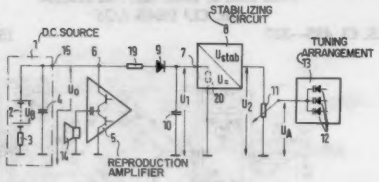
TUNABLE RADIO RECEIVER WITH DETUNING PREVENTION DUE TO POWER SUPPLY VARIATIONS

Hans-Joachim Paschen, Remchingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,631
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009652
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—343 **2 Claims**

1. A tunable radio receiver comprising a D.C. power supply

source, a reproduction amplifier having a power supply terminal connected to the D.C. power supply source, and a stabilizing circuit for generating a stabilized tuning supply voltage for varactor diodes used as tuning elements in a voltage-controlled tuning arrangement in the receiver, further comprising a blocking diode having its anode terminal coupled to said power supply terminal and its cathode terminal coupled to said stabilizing circuit and a capacitor parallel-coupled between



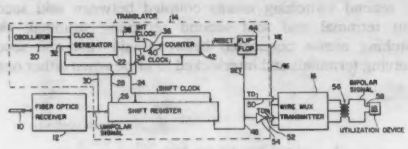
said cathode terminal and a reference potential terminal, wherein said stabilizing circuit has an input resistance and the time constant of said capacitor and input resistance, is greater than the time duration (T_1) of voltage changes at the supply terminal caused by reproduction variations in said reproduction amplifier.

4,355,423

TRANSLATOR SYSTEM FOR CONVERTING UNIPOLAR FIBER OPTIC SIGNALS TO BIPOLAR SIGNALS UTILIZING MANCHESTER CODING

C. Earle Theall, Weston, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 20, 1979, Ser. No. 106,065
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—608 8 Claims



1. In a Manchester system for translating a received unipolar signal to a bipolar signal, the received signal having a predetermined shortest allowable message gap, the system comprising:

means for storing the received signal long enough to detect the occurrence of a shortest allowable message gap;

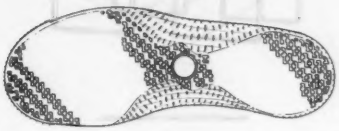
transmitting means for converting received unipolar signals to bipolar format;

detecting means connected at an input thereof to the storing means and at an output thereof to the transmitting means for enabling the conversion, by the transmitting means, until a gap in excess of the shortest allowable message gap occurs thereby terminating such conversion until a subsequent signal is received.

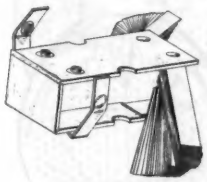
266,540
SHORTS
Ken Nacinovich, Willoughby, Australia, assignor to Speedo Knitting Mills Pty Limited, New South Wales, Australia
Filed Oct. 10, 1978, Ser. No. 950,250
Claims priority, application Australia, May 25, 1978, 74,846
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—42

266,541
SHIRT
James M. Perry, 209 Brown St., Little Rock, Ark. 72205
Filed Oct. 23, 1978, Ser. No. 953,642
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—215

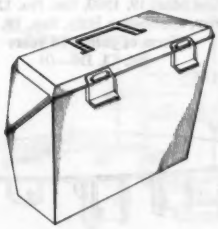
266,542
TREADED SHOE BOTTOM
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Division of Ser. No. 877,359, Feb. 13, 1978. This application Apr. 28, 1980, Ser. No. 144,270
The portion of the term of this patent subsequent to Oct. 7, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



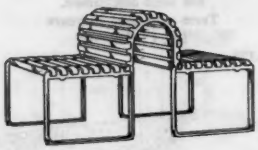
266,543
VENETIAN BLIND COLOR SAMPLER PACKET
Harold Reiss, New York, N.Y., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.
Filed Dec. 11, 1980, Ser. No. 215,501
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



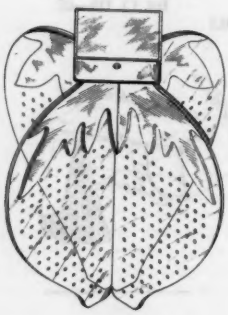
266,544
DOCUMENT FILE
E. Bryant Crutchfield, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Oct. 31, 1980, Ser. No. 202,857
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—72



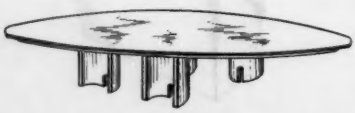
266,545
BENCH
John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.
Filed Jan. 19, 1979, Ser. No. 4,976
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60



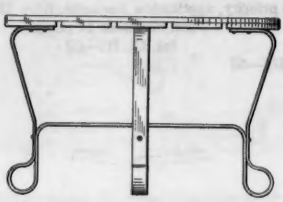
266,546
KITCHEN UTENSIL RACK
Richard J. Goodwin, 2510 U St., Sacramento, Calif. 95818
Filed Feb. 4, 1980, Ser. No. 118,576
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113



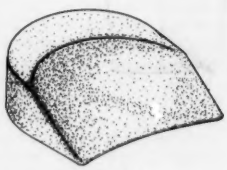
266,547
TABLE
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Italy
Filed Mar. 19, 1980, Ser. No. 131,647
Claims priority, application Italy, Sep. 19, 1979, 60938B/79
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



266,548
TABLE
John Huber, Jr., 178 E. Cresent Ave., Mahwah, N.J. 07430
Filed May 6, 1980, Ser. No. 147,113
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

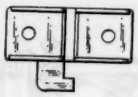


266,549
PRENATAL SUPPORT PILLOW
Richard G. Lund, III, 7564 Major Ave. North, Brooklyn Park, Minn. 55443
Filed Jul. 29, 1980, Ser. No. 173,323
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

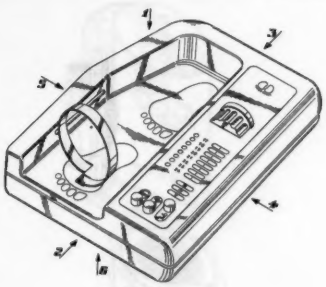


266,550
MUG
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,360
Claims priority, application Japan, Jul. 18, 1979, 54-030155
The portion of the term of this patent subsequent to May 25, 1989, has been disclaimed.
Term of patent 7 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

266,551
SHELF REST
William Carlstrom, Chester, N.J., assignor to Lyle/Carlstrom Associates, Inc., Somerville, N.J.
Filed Sep. 18, 1980, Ser. No. 188,460
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—381

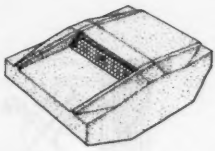


266,552
FOOTGAUGE
Pierre Bidegain; Georgy Bidegain, both of Pau, France; Dieter Baumann, Greifenstein-Holzhausen, Fed. Rep. of Germany; Rolf Baumann, Leun-Stockhausen, Fed. Rep. of Germany, and Peter Stielhoff, Dortmund, Fed. Rep. of Germany, assignors to Bidegain S.A., Pau, France
Filed Aug. 25, 1980, Ser. No. 181,210
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, URA 202/80
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70

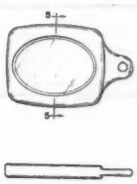


266,553
ELECTRIC FENCE SPOTTER
Chris P. Kelly, Rte. 2, Sparta, Wis. 54656
Filed Nov. 17, 1980, Ser. No. 207,233
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

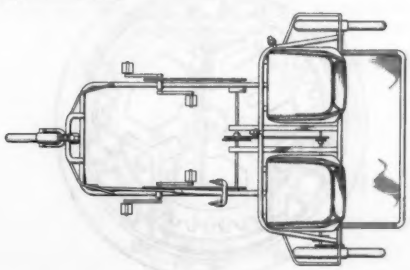
266,554
REFLECTIVE PAVEMENT MARKER FOR ROADS
Angelo V. Beretta, Lincoln, R.I., assignor to Durastone Company, Inc., Lincoln, R.I.
Filed Jan. 7, 1980, Ser. No. 109,864
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—113



266,555
MINIATURE TWO-SIDED PICTURE FRAME
Aidan M. McNally, P.O. Box 530155, Miami, Fla. 33153
Filed Mar. 27, 1980, Ser. No. 134,569
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—80



266,556
TRICYCLE
David S. Arthur, 14000 Tahiti Way, Marina Del Rey, Calif. 90291
Filed Jun. 30, 1980, Ser. No. 164,771
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112

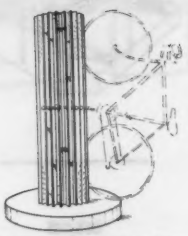


266,557

BICYCLE RACK

Terrance R. Smith, 28 Roundhay Dr., Nepean, Ontario, Canada K2G 1B5

Filed Oct. 23, 1980, Ser. No. 200,259
Claims priority, application Canada, Oct. 16, 1980, 16-10-80-4
Term of patent 14 years
Int. Cl. D08—*10*
U.S. Cl. D12—115



266,558

COMBINED BICYCLE SPROCKET AND CHAIN GUARD

John D. Breen, Antioch, and Ronald L. Ihrie, Nashville, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

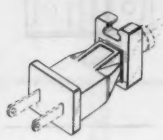
Filed Jan. 10, 1980, Ser. No. 111,001
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—123

266,559

BODY FOR ELECTRIC PLUG

Ronald D. Gibbs, Naperville, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Feb. 25, 1980, Ser. No. 124,657
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



266,560

LOUDSPEAKER

Hideyuki Matsubara, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan

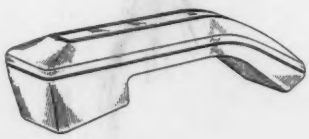
Filed Sep. 24, 1980, Ser. No. 190,338
Claims priority, application Japan, Mar. 31, 1980, 55-12699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—30

266,561

TELEPHONE HANDSET

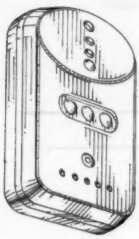
James W. M. Bee, Palo Alto, Calif., and Peter D. H. Trussler, Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1979, Ser. No. 90,001
Claims priority, application Canada, Oct. 4, 1979, 04-10-79-1
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63



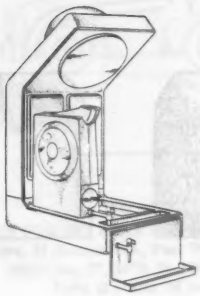
266,562
RADIO SET
Yoshitaka Hattori, Kasiwa, Japan, assignor to Tomishiba Denki Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 128,620
Claims priority, application Japan, Nov. 9, 1979, 54-46774
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

266,563
CASE FOR DATA PROCESSOR OR SIMILAR ARTICLE
Edward A. White, Phoenix, Ariz., assignor to Arizona Digital Corp., Phoenix, Ariz.
Filed Apr. 2, 1979, Ser. No. 26,238
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100

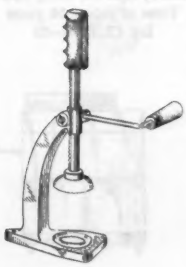


266,564
POINT OF SALE TERMINAL HOUSING
George D. Margolin, Newport Beach, and Michael Tooke, Calabasas, both of Calif., assignors to Auto Register, Inc., Glendale, Calif.
Filed Nov. 6, 1978, Ser. No. 957,911
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—102

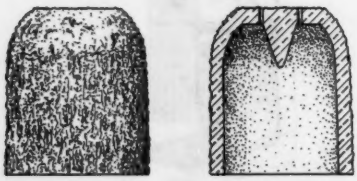
266,565
JUICE VENDING BACK COUNTER UNIT
Morley L. Smith, Beaconsfield, Canada, assignor to Orangematic Canada Inc., Canada
Filed Apr. 22, 1980, Ser. No. 142,888
Claims priority, application Canada, Oct. 24, 1979, 2410791
Term of patent 3½ years
Int. Cl. D15—*08*
U.S. Cl. D15—112



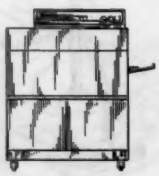
266,566
ALUMINUM CAN CRUNCHER
Richard E. Schmid, 1911 Northshore Dr., Humble, Tex. 77339
Filed Jun. 26, 1980, Ser. No. 163,241
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



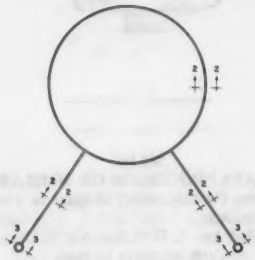
266,567
INSULATING RISER SLEEVE
Nick Wukovich, North Olmstead, Ohio, assignor to Foseco Trading AG, Chur, Switzerland
Continuation-in-part of Ser. No. 817,853, Jul. 21, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,472
Claims priority, application United Kingdom, Jan. 21, 1977, 978644/77
Term of patent 14 years
Int. Cl. D15—09
U.S. Cl. D15—135



266,568
COMBINED COPY MACHINE AND STORAGE SUPPORT OR SIMILAR ARTICLE
Toshihiko Sakow, Teaneck, N.J.; Isao Katayama, Kobe, and Sadao Ishihara, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan
Division of Ser. No. 736,977, Oct. 29, 1976, Pat. No. Des. 254,181. This application Jun. 28, 1978, Ser. No. 919,659
Claims priority, application Japan, Apr. 30, 1976, 51-16338; Apr. 30, 1976, 51-16339; Apr. 30, 1976, 51-16340
Term of patent 14 years
Int. Cl. D16—03
U.S. Cl. D16—30

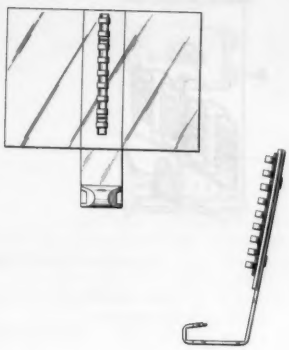


266,569
SPECTACLE WEIGHT RELIEVER
Stephen A. Crothers, 17/1 Brown Rd., Maroubra, New South Wales, 2035, Australia
Filed May 27, 1980, Ser. No. 153,882
Term of patent 14 years
Int. Cl. D16—06
U.S. Cl. D16—123

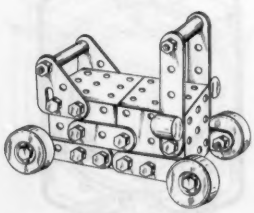


266,570
INK ROLL SET FOR PRINTING APPARATUS
Masahiko Mori, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan
Filed Aug. 21, 1980, Ser. No. 180,223
Claims priority, application Japan, Mar. 18, 1980, 55-10616
Term of patent 14 years
Int. Cl. D18—99
U.S. Cl. D18—22

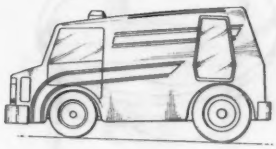
266,571
TELEPHONE LIST HOLDER
Harry Charbonneau, P.O. Box 1403, Station B, Sudbury, Ontario P3E 5K4, Canada
Filed Mar. 26, 1980, Ser. No. 134,340
Claims priority, application Canada, Nov. 6, 1979, 6-11-79-3
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



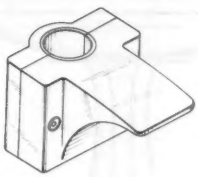
266,572
TOY VEHICLE
Roger Chalandard, Moirons en Montagne, France, assignor to Dessoy et Fils, Moirans en Montagne, France
Filed Sep. 19, 1979, Ser. No. 77,165
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—120



266,573
TOY VEHICLE OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Feb. 4, 1980, Ser. No. 117,969
Claims priority, application Japan, Dec. 26, 1979, 54-55233
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—140

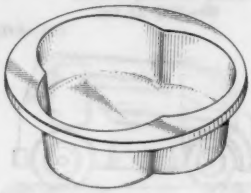


266,574
SCRAPER FOR SKI POLE OR SIMILAR ARTICLE
Irwin M. Krive, 31 Slocum Ave., Port Washington, N.Y. 11050
Filed Jun. 27, 1979, Ser. No. 52,338
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



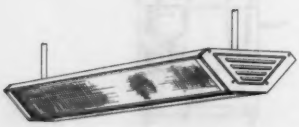
266,575
SHOWERHEAD
Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497
Filed Nov. 23, 1981, Ser. No. 323,868
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

266,576
BATHTUB
Jeffrey Harrison, Brookhouse, England, assignor to Kallista Baths, Inc., San Francisco, Calif.
Filed Nov. 20, 1980, Ser. No. 208,802
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

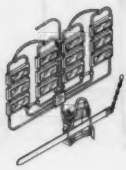


266,577
COMBINED SUPPORT SURFACE AND PEDESTAL FOR A LAVATORY
Jack N. Kaiser, Danville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Jul. 28, 1980, Ser. No. 172,880
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—70

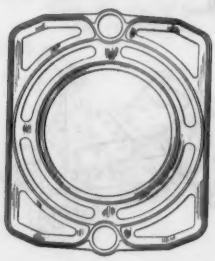
266,578
COMBINED HEATING AND LIGHTING FIXTURE
William R. Moshier, Independence, Mo., assignor to Mabel W. Zellers, Reading, Pa.
Filed Feb. 8, 1980, Ser. No. 119,698
Term of patent 14 years
Int. Cl. D23—*03;* D26—*05*
U.S. Cl. D23—75



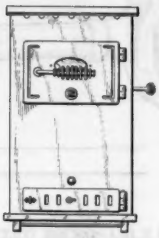
266,579
INDIVIDUAL HEAT-REFLECTING DEVICE
Jury M. Barats, ulitsa Postysheva, 107, kv. 1; Jury N. Kiklevich, ulitsa Universitetskaya, 97, kv. 26, and Valentin A. Selin, ulitsa Universitetskaya, 100a, kv. 178, all of Donetsk, U.S.S.R.
Filed Feb. 26, 1980, Ser. No. 124,951
Claims priority, application U.S.S.R., May 19, 1977, 15489
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



266,580
BOILER SECTION
Henning Rasmussen, Odense NV, Denmark, assignor to A/S Tasso Odense, Odense, Denmark
Filed Apr. 22, 1980, Ser. No. 142,726
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—90

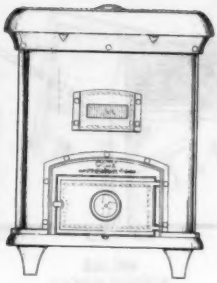


266,581
WOOD STOVE
Leonard H. Ferrara, Jr., Raynham, Mass., assignor to Superior Stove Company, Inc., Stoughton, Mass.
Filed Sep. 8, 1980, Ser. No. 185,367
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

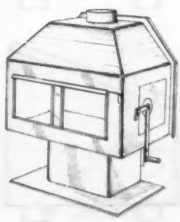


266,582
WOOD BURNING STOVE
Larry A. Schwartz, Warwick; Robert Gelter, Coventry, and Peter S. Albertsen, Quidnesset, all of R.I., assignors to Jamestown Group, Providence, R.I.
Filed Sep. 15, 1980, Ser. No. 187,220
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

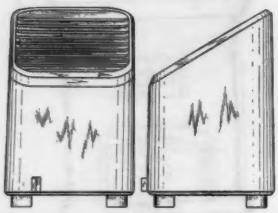
266,583
STOVE
Robert Bickmeyer, Orion Pl., Huntington, N.Y. 11743
Filed Mar. 6, 1981, Ser. No. 241,441
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



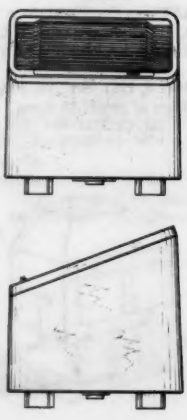
266,584
STOVE FOR BURNING COMBUSTIBLE SOLID FUELS
Robert D. Thulman, 10309 Wilde Lake Ter., Columbia, Md. 21044, and Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055
Filed May 4, 1981, Ser. No. 260,089
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



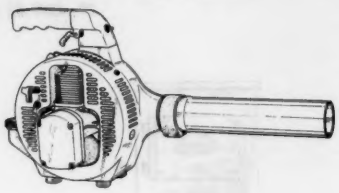
266,585
ROOM AIR CLEANER
William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed Sep. 2, 1980, Ser. No. 183,682
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



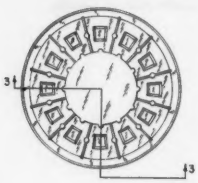
266,586
ROOM AIR CLEANER
William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed May 29, 1981, Ser. No. 268,446
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



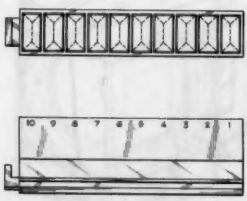
266,587
POWER BLOWER
Masatoshi Satoh, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Jul. 25, 1980, Ser. No. 172,185
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



266,588
CUVETTE TRAY DESIGN
John W. Mellars, Denville, N.J., assignor to Warner-Lambert Company, Morris Plaines, N.J.
Filed Oct. 15, 1979, Ser. No. 85,074
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—17

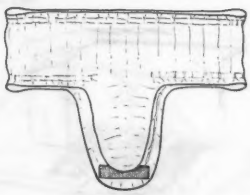


266,589
CUVETTE HOUSING
Saul R. Gilford, Oberlin, and Robert J. Emary, Wakeman, both of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio
Filed Nov. 6, 1978, Ser. No. 958,117
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31

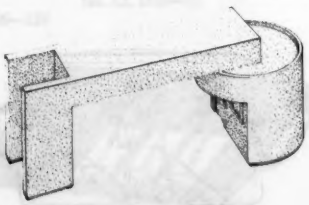


266,590
ACOUSTIC EAR MOLD
Harry Bennett, 3544 N. Mariposa, Fresno, Calif. 93726
Filed Jan. 28, 1980, Ser. No. 115,933
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35

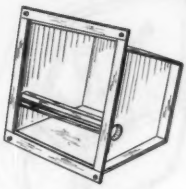
266,591
ELASTICIZED DISPOSABLE DIAPER
Lenore S. Ryan, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 14, 1980, Ser. No. 121,384
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—50



266,592
BUILDING STRUCTURE
Edward F. Bavis, Cincinnati, Ohio, assignor to E. F. Bavis & Associates, Inc., Cincinnati, Ohio
Division of Ser. No. D. 937,519, Aug. 28, 1978, Pat. No. Des. 258,087. This application May 19, 1980, Ser. No. 151,453
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—31

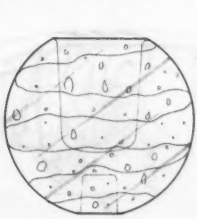


266,593
WALL INSERTED STEP OR HAND BOX
Wilhelm Nelles, Nesenhaus 2, 4030 Ratingen 6, Fed. Rep. of Germany
Filed Jul. 13, 1978, Ser. No. 924,449
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, MR 220
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—69

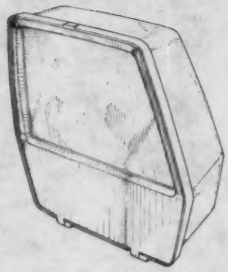


266,594
CANDLESTICK
Timo Sarpaneva, Helsinki, Finland, assignor to A.Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 9, 1979, Ser. No. 92,759
Claims priority, application Finland, May 18, 1979, 329/79
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—9

266,595
COMBINATION CANDLESTICK AND BOWL
Timo Sarpaneva, Helsinki, Finland, assignor to A.Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 13, 1979, Ser. No. 93,265
Claims priority, application Finland, May 18, 1979, 337/79
Term of patent 14 years
Int. Cl. D26—*01*; D7—*01*
U.S. Cl. D26—10

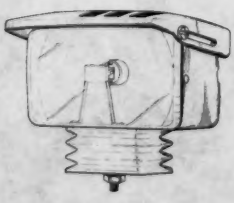


266,596
FLOODLIGHT
Jon M. Newgard, Louisville, Ky., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 24, 1980, Ser. No. 133,589
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—24



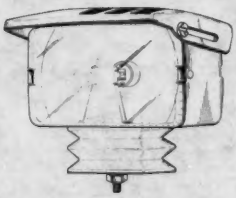
266,597
VEHICULAR HOOD-MOUNTED LAMP HOUSING
Willie A. Roberts, 8080 Roselawn St., Detroit, Mich. 48204
Continuation-in-part of Ser. No. 117,553, Feb. 1, 1980. This application May 27, 1980, Ser. No. 153,716
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

266,598
AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,301
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

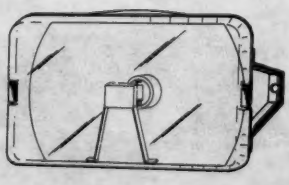


266,599
FOG LIGHT FOR AUTOMOBILE
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,303
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

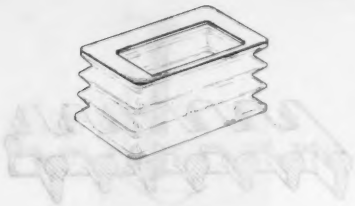
266,600
AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,353
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



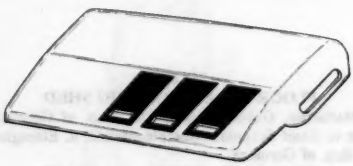
266,601
LENS REFLECTOR ASSEMBLY FOR AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,568
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



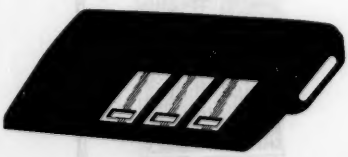
266,602
FOOT COVER FOR AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,555
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—113



266,603
COVER FOR AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,564
Term of patent 14 years
Int. Cl. D26—*06, 05*
U.S. Cl. D26—139



266,604
COVER FOR AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,565
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—139

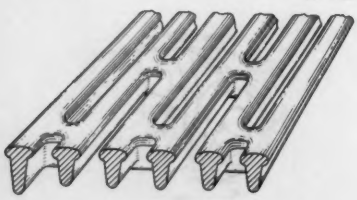


266,605
PIPE
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526
Filed Mar. 31, 1981, Ser. No. 249,625
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

266,606
RAZOR HOLDER
Karl M. Keck, 2155 Silver Palm West, Boca Raton, Fla. 33432
Filed Sep. 24, 1979, Ser. No. 78,218
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—44

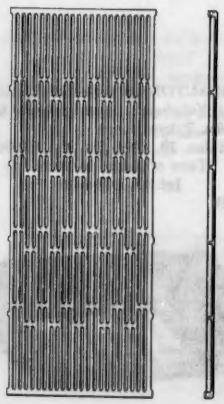
266,607
HANDPIECE FOR MANICURE MACHINE
Sunjeen Choe, 2938 Oakhurst Ave., Los Angeles, Calif. 90034
Filed Aug. 25, 1980, Ser. No. 180,667
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58

266,608
FLOOR PANEL FOR A PIG SHED
Franz Bartscher, Geseke, Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik-und Eisengiesserei, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,269
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2

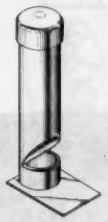


266,609
FLOOR PANEL FOR A PIG SHED
Franz Bartscher, Geseke, Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik und Eisengiesserei, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,270
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2

266,610
FLOOR PANEL FOR A PIG SHED
Franz Bartscher, Geseke/Westf., Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik u. Eisengiesserei, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 134,762
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



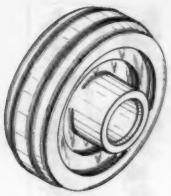
266,611
BIRD FEEDER
Thomas Metts, P.O. Box 219, and John R. Harmon, Rte. 9, Box 800, both of Stafford, Va. 22554
Filed May 21, 1981, Ser. No. 265,973
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



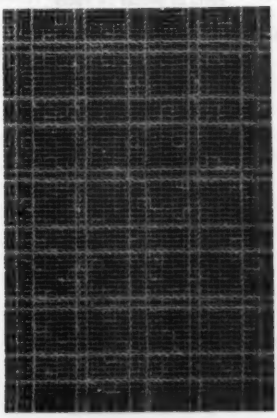
266,612
VACUUM CLEANER
Niklaus Hug, Romanshorn, Switzerland, assignor to Rommag P. Wörwag & Co., Romanshorn, Switzerland
Filed Oct. 2, 1979, Ser. No. 81,214
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, URA 373
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—23

266,613
ACCESSORY SOLUTION TANK FOR VACUUM CLEANER
Dale E. Lowder, North Muskegon, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Dec. 18, 1980, Ser. No. 218,041
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31

266,614
ROLLER
Donald Neville, Manhattan Beach, Calif., assignor to Plastiglide Manufacturing Corporation, Hawthorne, Calif.
Filed May 1, 1978, Ser. No. 901,741
Term of patent 14 years
Int. Cl. D12—*05*; D8—*08*
U.S. Cl. D34—29



266,615
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,485
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, URA 150
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

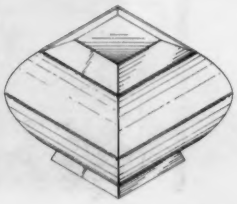


266,616
CONTINUOUS SHEET MATERIAL OR THE LIKE
Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1980, Ser. No. 162,466
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B

266,617
CONTINUOUS SHEET MATERIAL OR THE LIKE
Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1980, Ser. No. 162,468
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B

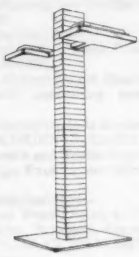
266,618
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Oct. 2, 1980, Ser. No. 193,257
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 369
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 C

266,619
CREMATION URN
David E. Krech, Inver Grove Heights, Minn., assignor to DeKrech Enterprises, Inc., Inver Grove Heights, Minn.
Filed Oct. 11, 1979, Ser. No. 83,963
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—5

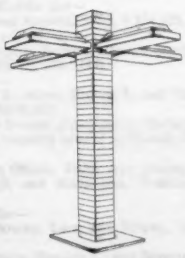


266,620
CREMATION URN
David E. Krech, Inver Grove Heights, Minn., assignor to DeKrech Enterprises, Inc., Inver Grove Heights, Minn.
Filed Oct. 11, 1979, Ser. No. 83,964
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—5

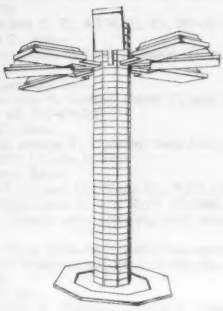
266,621
ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM
Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,036
Claims priority, application Mexico, Dec. 26, 1980, 3071
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D99—24



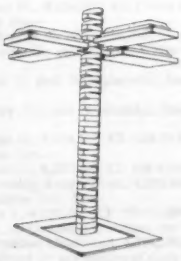
266,622
ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM
Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,037
Claims priority, application Mexico, Dec. 26, 1980, 3073
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D99—24



266,623
ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM
Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,038
Claims priority, application Mexico, Dec. 26, 1980, 3070
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D99—24



266,624
ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM
Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,039
Claims priority, application Mexico, Feb. 26, 1980, 3072
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D99—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Indesko: *See*—
Odsvall, Jan, 4,354,658, Cl. 249-202.000.

AB Rescon: *See*—
Hagglund, Hans, 4,354,382, Cl. 73-290.00R.

AB Volvo: *See*—
Harde, Bo T. S., 4,354,521, Cl. 137-571.000.

Abel, Irving R.; and Hatch, Marcus R., to Honeywell Inc. Optical system having a dual field of view. 4,354,742, Cl. 350-442.000.

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Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.

Abrahamson, David M., to Dason International Products Inc. Afghan construction and method. 4,354,443, Cl. 112-440.000.

ACF Industries, Incorporated: *See*—
Hochmuth, William R.; and Shelton, William S., 4,354,523, Cl. 137-614.180.

Achermann, Heinz; and Daetwyler, Jurg. Specimen testing apparatus. 4,354,764, Cl. 374-56.000.

Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., to Singer Company, The. Phase locked gyroscope wheel supply for synchronous hysteresis motor. 4,354,393, Cl. 74-5.370.

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Adams, Ronald D.; and Chia, E. Henry, to Southwire Company. Method of forge-conditioning non-ferrous metals prior to rolling. 4,354,880, Cl. 148-2.000.

AES Technology Systems, Inc.: *See*—
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,354,789, Cl. 414-104.000.

Agatahama, Shunichi, to Omron Tateisi Electronics Company. Sealed electric assembly with connecting terminals. 4,355,291, Cl. 335-128.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Neveu, Jean-Louis, 4,355,067, Cl. 428-253.000.

Agency of Industrial Science and Technology, The: *See*—
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,354,936, Cl. 210-602.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; and Wenzl, Peter, 4,355,185, Cl. 568-50.000.
Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.

Aggarwal, Sundar L.: *See*—
Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.

Aho, Sakari, to SAK Industries (1980) Ltd. Folding marine trap. 4,354,325, Cl. 43-105.000.

Ahuja, Ramesh C.: *See*—
van Turnhout, Jan; and Ahuja, Ramesh C., 4,355,089, Cl. 430-130.000.

Ainoura, Masato. Screw type hone assembly for the honing of gears. 4,354,328, Cl. 51-206.400.

Airco, Inc.: *See*—
Estes, James W., 4,354,829, Cl. 432-117.000.
Kayser, John P.; and Pinkert, John R., 4,354,493, Cl. 128-276.000.

Aisin Seiki Co., Ltd.: *See*—
Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,354,423, Cl. 91-369.00A.
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Toyoda, Minoru, 4,354,368, Cl. 70-456.00R.

Aisin Seiki Kabushiki Kaisha: *See*—
Oyama, Tadashi; and Kawata, Shoji, 4,354,525, Cl. 137-625.500.

Akaiwa, Yoshihiko: *See*—
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Akers, Francis I.: *See*—
Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.

Akesson, Ingve R., to Societe d'Assistance Technique Pour Produits Nestle, S.A. Spring assembly system. 4,354,428, Cl. 99-639.000.

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Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.

Aktiebolaget Bofors: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,354,899, Cl. 159-13.00A.

Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., to Bell Telephone Laboratories, Incorporated; and N. V. Philips Gloeilampenfabrieken. Spelled word recognizer. 4,355,302, Cl. 340-146.30Q.

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Bischoff, Albrecht; and Aldinger, Fritz, 4,355,082, Cl. 428-607.000.

Alessio, Lorenzo E.; and Cuneo, Giuseppe, to Black & Decker Inc. Tachometric generator. 4,355,251, Cl. 310-155.000.

Alfa-Laval AB: *See*—
Kristoffersson, Ingmar; and Heurlin, Gustav S., 4,354,551, Cl. 165-166.000.
Stroucken, Klaus H. D., 4,354,632, Cl. 233-20.00A.

Allanson, Ernest E.: *See*—
Edmundowicz, John M.; and Allanson, Ernest E., 4,354,971, Cl. 260-239.100.

Allen-Bradley Company: *See*—
Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., 4,355,269, Cl. 318-436.000.

Allen, Richard C.: *See*—
Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., 4,355,037, Cl. 424-267.000.

Allied Corporation: *See*—
Lee, Lester T. C.; and Liu, Kang-Jen, 4,355,116, Cl. 521-27.000.

Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., to International Harvester Co. Check valve assembly with actuator. 4,354,931, Cl. 210-136.000.

Alsop, John H., IV, to Texas Instruments Incorporated. Apparatus and method of error detection and/or correction in a data set. 4,355,391, Cl. 371-37.000.

Altosaar, Arkadi: *See*—
Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.

Am International, Inc.: *See*—
Westdale, Virgil W.; and Novotny, John, Jr., 4,355,088, Cl. 430-98.000.

Ambrose, Lawrence A., to Bryant Grinder Corporation. Loader for grinding machine. 4,354,329, Cl. 51-215.00H.

Amerace Corporation: *See*—
Luzzi, Glenn J., 4,354,721, Cl. 339-94.00R.

American Color & Chemical Corporation: *See*—
Renfrew, Edgar E.; and Zanella, Dominic A., 4,355,012, Cl. 423-226.000.

American Filtrona Corporation: *See*—
Berger, Richard M., 4,354,889, Cl. 156-180.000.

American General Supply Company: *See*—
White, Herbert A., Jr., 4,354,659, Cl. 249-206.000.

American Hoechst Corporation: *See*—
Walls, John E., 4,355,096, Cl. 430-302.000.

American Home Products Corp.: *See*—
Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,355,031, Cl. 424-250.000.

American Hospital Supply Corporation: *See*—
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American Standard Inc.: *See*—
Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.

American Sterilizer Company: *See*—
Sundheimer, Craig S.; and Joslin, Bradley D., 4,354,514, Cl. 134-152.000.

AMF Incorporated: *See*—
Brutsman, James W., 4,354,605, Cl. 211-49.00D.

AMP Incorporated: *See*—
Bakermans, Johannes C. W., 4,354,720, Cl. 339-91.00R.
Brandewie, Joseph E.; and Shatto, Walter C., Jr., 4,354,626, Cl. 226-109.000.
Bright, Edward J.; and Kandybowski, Steven J., 4,354,718, Cl. 339-17.0CF.
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,354,729, Cl. 339-258.00R.
Weidler, Charles H., 4,354,719, Cl. 339-59.00M.

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Pearson, Willard C., 4,355,266, Cl. 318-85.000.

Amplatz, Kurt. Scanning x-ray system. 4,355,409, Cl. 378-146.000.

Amtel Communications, Inc.: *See*—
Curtin, William J., 4,355,207, Cl. 179-18.0FC.

Anderle, Joseph A., to Levolor Lorentzen, Inc. Holder for supporting a valance at a Venetian blind head. 4,354,300, Cl. 24-343.000.

Andersen, Esther. Hood for prevention of scalp hair loss. 4,354,496, Cl. 128-403.000.

Andersen, Niels L.: *See*—
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Anderson, Wayne M.: *See—*
Hang, Kenneth W.; and Anderson, Wayne M., 4,355,114, Cl. 501-5.000.
Hang, Kenneth W.; and Anderson, Wayne M., 4,355,115, Cl. 501-21.000.

Andersson, Curt E., to Andersson, Kurt Goran. Goods conveyor track. 4,354,575, Cl. 187-12.000.

Andersson, Kurt Goran: *See—*
Andersson, Curt E., 4,354,575, Cl. 187-12.000.

Andre Buechl Kalk-und Portandzementwerk: *See—*
Sgaslik, Friedrich, 4,354,862, Cl. 55-296.000.

Angevine, Philip J.: *See—*
Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., 4,354,927, Cl. 208-251.00H.

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Anic, S.p.A.: *See—*
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.

Anritsu Electric Company Limited: *See—*
Shirono, Junkichi; and Honda, Katsuhisa, 4,354,436, Cl. 108-123.000.

Antonellis, Robert A. Wheelchair construction. 4,354,791, Cl. 414-343.000.

Antrim, Richard L.; and Hurst, Louis S., to Nabisco Brands, Inc. Process for preparing agglomerated fibrous cellulose. 4,355,117, Cl. 521-28.000.

Aoki, Akihiro: *See—*
Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.

Aoki, Bunya: *See—*
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Aoki, Takashi: *See—*
Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, 4,354,422, Cl. 91-358.00R.

Arai, Yasunori; Ogawa, Ryota; and Ohishi, Michiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Copying apparatus. 4,354,756, Cl. 355-3.00R.

Arakawa, Hideki, to Fujitsu Limited. Semiconductor memory device. 4,355,375, Cl. 365-185.000.

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Aratani, Matsuhiko: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Ariel, Gideon B., to Pepsico, Inc. Exerciser. 4,354,676, Cl. 272-129.000.

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Arnaud, Maurice, deceased; by Avril nee Arnaud, Marie C. N. A., heir; by Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, to Societe Lignes Telegraphiques et Telephoniques. Cable elements comprising optical fibres and cables incorporating them. 4,354,732, Cl. 350-96.230.

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Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M. Acoustic surface wave filter. 4,355,290, Cl. 333-195.000.

Bahder, George, to Cable Technology Labs., Inc. Electrochemical tree resistant power cable. 4,354,992, Cl. 264-85.000.

Bahrmann, Helmut: *See—*
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.

Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., to Diamond Shamrock Corporation. Strengthened fiberous electrochemical cell diaphragm and a method for making. 4,354,900, Cl. 162-106.000.

Baillie, Lloyd A., to Atlantic Richfield Company. Vapor pressure sensor and flow measuring devices. 4,354,389, Cl. 73-749.000.

Baker, Willard C., to Dana Corporation. Hydromechanical transmission. 4,354,400, Cl. 74-687.000.

Bakermans, Johannes C. W., to AMP Incorporated. Connector assembly having improved latching means. 4,354,720, Cl. 339-91.00R.

Bako, Lazlo, to Kidde, Inc. (Presto Lock Company Division). Combination locks. 4,354,366, Cl. 70-312.000.

Baldwin, Blair F.: *See—*
Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.

Baldwin, Stoddard & Co.: *See—*
Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.

Balkus, Carl E. Wood splitting device. 4,354,537, Cl. 144-193.00C.

Bally Manufacturing Corporation: *See—*
Kmiec, Gregory E., 4,354,680, Cl. 273-121.00A.

Baltes, Herbert; and Leupold, Ernst I., to Hoechst Aktiengesellschaft. Process for the manufacture of methyl glyoxal. 4,355,187, Cl. 568-471.000.

Barakitis, Nikolaos: *See—*
Cohen, Sheppard; and Barakitis, Nikolaos, 4,355,261, Cl. 315-47.000.
Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., 4,355,265, Cl. 315-290.000.

Baran, Rowland S.: *See—*
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,354,830, Cl. 432-258.000.

Barber-Colman Company: *See—*
Schewe, Richard A., 4,354,642, Cl. 242-18.0PW.

Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, to Global Gym & Fitness Equipment Limited. Weight lifting device. 4,354,675, Cl. 272-118.000.

Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., to General Foods Corporation. Apparatus for the preparation of a food product. 4,354,815, Cl. 425-236.000.
Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, to Kernforschungsanlage Julich GmbH. Fluidized bed reactor with open reaction gas input and method of increasing the duct. 4,354,635, Cl. 239-11.000.
Barone, Salvatore: *See*—
Szanto, Elmer G.; Wu, George; and Barone, Salvatore, 4,354,405, Cl. 83-13.000.
Bartels, Gunter: *See*—
Mateika, Dieter; and Bartels, Gunter, 4,355,072, Cl. 428-336.000.
Barthelme, Julius A.: *See*—
Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
Bartos, Donald M., to Dow Corning Corporation. Nose mask gas delivery device. 4,354,488, Cl. 128-205.250.
BASF Aktiengesellschaft: *See*—
Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, 4,355,180, Cl. 564-398.000.
Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, 4,355,093, Cl. 430-275.000.
Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, 4,354,969, Cl. 260-156.000.
Schwendemann, Volker; and Mangold, Dietrich, 4,354,979, Cl. 260-453.00P.
BASF Wyandotte Corporation: *See*—
Camp, Ronald L., 4,354,956, Cl. 252-316.000.
Bates, Ronald F.: *See*—
Wang, Chih C.; and Bates, Ronald F., 4,355,062, Cl. 428-64.000.
Bath, William R.: *See*—
Morrow, William D.; and Bath, William R., 4,354,606, Cl. 212-175.000.
Battelle-Institut e.V.: *See*—
Lorenz, Peter; and Schwaier, Anita, 4,355,019, Cl. 424-9.000.
Bauer, Peter. Fluid dynamic energy exchanger. 4,354,805, Cl. 417-54.000.
Baugh, William D.: *See*—
Frampton, Orville D.; and Baugh, William D., 4,354,978, Cl. 260-410.90R.
Baumann, Gert F.: *See*—
Iliopulos, Miltiadis I.; and Baumann, Gert F., 4,355,118, Cl. 521-108.000.
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, to Dow Corning GmbH. Air- and/or oven-drying lubricant paint composition for producing dry-film lubricants. 4,355,124, Cl. 524-104.000.
Baumann, Manfred: *See*—
Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, 4,355,180, Cl. 564-398.000.
Baunack, Fritz, to Babcock-BSH AG vormals Buttner-Schilde-Haas AG. Method of and a device for feeding solid fuel in a fluidized bed hearth. 4,354,439, Cl. 110-245.000.
Bausch & Lomb Incorporated: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,355,147, Cl. 526-264.000.
Riedhammer, Thomas M.; and Smith, Francis X., 4,354,952, Cl. 252-106.000.
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and data system using data qualifiers. 4,355,356, Cl. 364-200.000.
Baxter Travenol Laboratories, Inc.: *See*—
Richardson, Gerry D.; and Cairo, Joseph A., 4,354,984, Cl. 261-66.000.
Stupar, James A.; and Smith, Stephen D., 4,354,660, Cl. 251-4.000.
Bayer Aktiengesellschaft: *See*—
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,355,171, Cl. 556-446.000.
Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.
Rademachers, Jakob; and Pflugmacher, Ingo, 4,355,006, Cl. 423-61.000.
von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.
Beach, Shirley, to Phillips Cables Limited. Extrusion of insulating plastic. 4,354,989, Cl. 264-40.600.
Becheiraz, Joseph, to Ciba-Geigy AG. Apparatus for the processing of photographic material in sheet form. 4,354,755, Cl. 354-322.000.
Bechthold, Horst; and Mohn, Ulrich, to Maschinenfabrik Buckau R.Wolf AG. Process for removing sulphuric acid components from flue gases. 4,355,013, Cl. 423-242.000.
Beck, Darrel R. Safety stress shutdown switch. 4,355,307, Cl. 340-679.000.
Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, to Hoechst Aktiengesellschaft. Process for the preparation of 4-phenoxy-phenols. 4,355,186, Cl. 568-52.000.
Beckman Instruments, Inc.: *See*—
Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.
Beckmann, Georg, to Waagner-Biro A.G. Method and apparatus for cooling hot bulk material. 4,354,438, Cl. 110-234.000.
Beecham Group Limited: *See*—
Cantello, Barrie C. C.; and White, Susan M., 4,355,004, Cl. 422-246.000.
Stirling, Irene, 4,354,974, Cl. 260-245.300.
Beecroft, Julian B.: *See*—
Tevruchte, William B.; and Beecroft, Julian B., 4,354,290, Cl. 114-344.000.
Beekman, Stanley: *See*—
Block, Barry H.; and Beekman, Stanley, 4,354,319, Cl. 36-114.000.
Beeson, Gary H., to Convergence Corporation. Video tape editing control system. 4,355,332, Cl. 360-14.100.
Beffano, John J.: *See*—
Linder, Morris B.; and Beffano, John J., 4,354,698, Cl. 285-98.000.
Beisecker, Mark B., to Gillette Company, The. Automatic temperature control system with manual off override for a catalytically heated curling device. 4,354,482, Cl. 126-409.000.
Bekaert Engineering: *See*—
De Muynck, Gabriel, 4,354,798, Cl. 414-750.000.
Bel, Roger P., to Metallisations et Traitements Optiques M.T.O. Optical relay used for transferring an image from one point to another along an optical axis. 4,354,730, Cl. 350-54.000.
Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., to Schlumberger Technology Corporation. Well logging communication system. 4,355,310, Cl. 340-858.000.
Belart, Juan, to ITT Industries, Inc. Hydraulic brake system having wheel slip control. 4,354,714, Cl. 303-114.000.
Bell & Howell Company: *See*—
Grant, Frederic F., 4,354,644, Cl. 242-68.300.
Bell Telephone Laboratories, Incorporated: *See*—
Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.
Bobeck, Andrew H., 4,355,373, Cl. 365-39.000.
Coldren, Larry A.; and Furuya, Kazuhito, 4,354,898, Cl. 156-647.000.
DeCosta, John; Mallos, James B.; and Roe, David B., 4,355,202, Cl. 178-18.000.
Hamilton, Billy H., 4,355,240, Cl. 307-44.000.
Ohm, Edward A., 4,355,314, Cl. 343-779.000.
Reudink, Douglas O.; and Yeh, Yu S., 4,355,411, Cl. 455-33.000.
Timor, Uzi, 4,355,399, Cl. 375-1.000.
Ben-David, Menashe; and Poffenberger, Russell E., to Automation Industries, Inc. Altitude alert system. 4,355,294, Cl. 340-27.00R.
Bendix Corporation, The: *See*—
Cording, Richard W.; and Morton, Daniel D., 4,355,305, Cl. 340-347.0SY.
Driscoll, Barry J., 4,355,293, Cl. 338-184.000.
Jessup, Gregory M., 4,355,298, Cl. 340-58.000.
Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, to Thomson-CSF. Device for reading a quantity of electric charges and charge-filter equipped with said device. 4,355,244, Cl. 307-304.000.
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, to Southwire Company; and National Steel Corporation. Method and apparatus for producing uniformly baked anodes. 4,354,828, Cl. 432-24.000.
Berard, Jean-Claude, to SEB S.A. Apparatus for the destruction of microfiches and the like. 4,355,227, Cl. 219-390.000.
Berger, Jean-Luc: *See*—
Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, 4,355,244, Cl. 307-304.000.
Berger, Richard M., to American Filtrona Corporation. Ink reservoir element for use in a marking instrument, and method and apparatus for producing same. 4,354,889, Cl. 156-180.000.
Bergersen, Hans A., to International Standard Electric Corporation. Method for making electrical heating mats from an expanded foil-insulation composite. 4,354,886, Cl. 156-50.000.
Bergland, Paul W., to Bobst Champlain, Inc. Sheet handling device. 4,354,671, Cl. 270-58.000.
Bergman, Raymond A. Air float power translation system. 4,354,796, Cl. 414-676.000.
Bergthaller, Peter; and Wenzl, Peter, to Agfa-Gevaert Aktiengesellschaft. Process for the preparation of 2-mercaptoalkyl-sulphides and 2-mercaptoalkylethers. 4,355,185, Cl. 568-50.000.
Berna AG Olten: *See*—
Rordorf, Horst, 4,354,910, Cl. 204-192.00R.
Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., to Du Pont de Nemours, E. I., and Company. Use of prolonged tack toners for the preparation of multilayer electric circuits. 4,355,055, Cl. 427-96.000.
Beyer, Horst; and Zerfass, Hans-Reiner, to Goetze AG. Impregnated gasket and method of producing. 4,355,068, Cl. 428-290.000.
Beyer, James B.; and Summers, James B., to Wisconsin Alumni Research Foundation. Phase shift and amplitude modulator. 4,355,289, Cl. 332-17.000.
Bianchetta, Donald L., to Caterpillar Tractor Co. Fluid motor control system providing speed change by combination of displacement and flow control. 4,354,420, Cl. 91-6.000.
Bianchi, Giuseppe; and Gussoni, Giovanni, to Industrie Pirelli Societa per Azioni. Method and apparatus for the restrained and flame-retardant laying of electric cables. 4,354,774, Cl. 405-157.000.
Bickham, Kenneth L., to Shell Oil Company. Waterfall technique for removing settled coal solids from a storage facility. 4,354,778, Cl. 406-137.000.
Bieber, Gerold: *See*—
Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

Bielawski, Billy J., Sr.: *See*—
Riera, John F.; Bielawski, Billy J., Sr.; and Pavelec, John J., 4,354,409, Cl. 83-285.000.

Bilco Tools, Inc.: *See*—
Coyle, William E., Sr., 4,354,706, Cl. 294-102.00A.

Billy, Jean-Claude: *See*—
Portejoie, Jean-Francois; Noel, Gilbert; and Billy, Jean-Claude, 4,355,387, Cl. 370-102.000.

Bingham, Marion G.; and Reagan, Leonard D., to Milchem Incorporated. Cuttings washer assembly. 4,354,513, Cl. 134-104.000.

Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to General Tire & Rubber Company, The. Solution polymerization. 4,355,156, Cl. 528-413.000.

Bingham, Robert E.: *See*—
Herold, Robert J.; and Bingham, Robert E., 4,355,188, Cl. 568-620.000.

Binz, Reiner; and Karl, Otto, to Siemens Aktiengesellschaft. Time-division multiplex digital switching network for a PCM telephone exchange system utilizing duplicate connecting field installations. 4,355,386, Cl. 370-100.000.

Bio-Energy Systems, Inc.: *See*—
Zinn, Michael F., 4,354,546, Cl. 165-1.000.

Birkenbach, Alfred; and Franke, Helmut, to ITT Industries, Inc. Mechanical actuating device for a disc brake. 4,354,581, Cl. 188-71.900.

Bischoff, Albrecht; and Aldinger, Fritz, to W. C. Heraeus GmbH. Ultra-thin wire for semiconductor connections. 4,355,082, Cl. 428-607.000.

Bitter, Istvan: *See*—
Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, 4,355,178, Cl. 564-44.000.

Bjorklund, Curt A. Non-drip valve apparatus. 4,354,519, Cl. 137-312.000.

Black Clawson Company, The: *See*—
Zink, Stanley C., 4,354,449, Cl. 118-126.000.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E.; and Cuneo, Giuseppe, 4,355,251, Cl. 310-155.000.

Blackwell, Jennings P., to Phillips Petroleum Company. Poly(arylene sulfide) composition containing a polyolefin. 4,355,059, Cl. 427-388.200.

Blanchard, Clarence E., to Outboard Marine Corporation. High tilt pivot mounting arrangement for an outboard motor. 4,354,847, Cl. 440-61.000.

Bliss, John W.: *See*—
Chowdhury, Mofazzal H.; and Bliss, John W., 4,354,624, Cl. 222-608.000.

Block, Barry H.; and Beekman, Stanley. Athletic shoe. 4,354,319, Cl. 36-114.000.

Block Engineering, Inc.: *See*—
Hirschfeld, Tomas; and Margoshes, Marvin, 4,355,336, Cl. 358-217.000.

Block, Sheldon A., to United States of America, Navy. Wedge assembly. 4,354,770, Cl. 403-409.000.

Bloom, Gordon E.; and Eris, Altan. DC to DC Converter. 4,355,352, Cl. 363-16.000.

Blossfeldt, Dieter, to Siemens Aktiengesellschaft. Circuit arrangement for operating opto-electronic display elements assigned to terminal devices, in particular in telephone system. 4,355,308, Cl. 340-781.000.

Bobeck, Andrew H., to Bell Telephone Laboratories, Incorporated. Magnetic bubble memory. 4,355,373, Cl. 365-39.000.

Bobst Champlain, Inc.: *See*—
Bergland, Paul W., 4,354,671, Cl. 270-58.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Mixture of aliphatic C_{10} branched olefin epoxides and use thereof in augmenting or enhancing the aroma of perfumes and/or articles. 4,354,951, Cl. 252-8.900.

Boden, Richard M., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of detergents using 1-n-butoxy-1-ethanol acetate. 4,354,953, Cl. 252-174.110.

Bodenseewerk Geratetechnik GmbH: *See*—
Giesenberg, Peter, 4,354,394, Cl. 74-5.440.

Bodicky, Raymond O., to Sherwood Medical Industries Inc. Method of connecting plastic tube to a plastic part. 4,354,495, Cl. 128-348.000.

Boegel, Gerhard; and Sahli, Max, to SFS Stadler AG. Screw driver apparatus. 4,354,403, Cl. 81-57.370.

Boeing Company, The: *See*—
Geithman, Glenn A.; and Olsen, Donald F., 4,355,222, Cl. 219-10.570.

Bogdanovic, Borislav, to Studiengesellschaft Kohle m.b.H. Production of organolithium compounds and lithium hydride. 4,354,982, Cl. 260-665.00R.

Bogner, Paul. Portable hamper. 4,354,543, Cl. 150-50.000.

Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Amino-functionalized phthalhydrazide intermediates. 4,355,165, Cl. 544-237.000.

Boguslawski, George; and Rynski, Michael J., to Miles Laboratories, Inc. Novel strain of *Bacillus licheniformis* useful in the production of glucose isomerase and method of screening Bacillus mutants for ability to produce glucose isomerase in the absence of xylose. 4,355,103, Cl. 435-34.000.

Boise Cascade Corporation: *See*—
Westphal, Teddy M., 4,354,784, Cl. 413-12.000.

Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., to Hesston Corporation. Bale wrapping apparatus. 4,354,429, Cl. 100-5.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,354,557, Cl. 172-49.500.

Boman, Hans G.: *See*—
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.

Bompard, Bruno; and Bruyere, Alain, to Commissariat a l'Energie Atomique; and Societe J. Brochier & Fils. Process and machine for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part. 4,354,888, Cl. 156-175.000.

Bononi, Walter H. Frame for eyeglasses. 4,354,744, Cl. 351-153.000.

Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Can and bottle vending. 4,354,614, Cl. 221-67.000.

Bormioli, Giorgio. Flexible connecting system for pipes with automatic safety release in case of tensile stress. 4,354,522, Cl. 137-614.020.

Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, to Agfa-Gevaert Aktiengesellschaft. Switching circuit for regulation of camera functions. 4,354,747, Cl. 354-23.00D.

Bortkevicius, Jonas: *See*—
Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.

Borton, Roland K.: *See*—
Noddings, John; and Borton, Roland K., 4,354,467, Cl. 123-352.000.

Bosch & Pierburg System oHG: *See*—
Hartel, Gunter, 4,354,383, Cl. 73-290.00B.

Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., to Hughes Aircraft Company. Radar signal processor. 4,355,312, Cl. 343-5.0VQ.

Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Thermoplastic poly(bisphenol A tere- or isophthalate) copolycarbonate. 4,355,150, Cl. 528-176.000.

Bottcher, Irmgard: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,355,039, Cl. 424-273.00R.

Bougiouris, Evangelos, to Ilco Unican Corp. Making formed milled cutters and key cutters. 4,354,780, Cl. 409-122.000.

Bourbeau, Frank J. Load responsive control system for constant speed induction motor. 4,355,274, Cl. 318-812.000.

Bowater Tutt Industries, Pty. Ltd.: *See*—
Maffey, Peter M., 4,354,890, Cl. 156-264.000.

Boxall, Larry G.; and Nagle, Dennis C., to Martin Marietta Corporation. Anode stud coatings for electrolytic cells. 4,354,918, Cl. 204-286.000.

Bramlage GmbH: *See*—
Wippermann, Gerhard; and Keller, Peter, 4,354,619, Cl. 221-263.000.

Brandewie, Joseph E.; and Shatto, Walter C., Jr., to AMP Incorporated. Apparatus for feeding a plurality of wires. 4,354,626, Cl. 226-109.000.

Brandon, Thomas M.: *See*—
Huggins, Edgar M.; and Brandon, Thomas M., 4,354,340, Cl. 56-27.500.

Brandsma, Russell G.: *See*—
Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.

Bricot, Claude; and Robin, Gerard, to Thomson-Brandt. Process for making video discs. 4,354,988, Cl. 264-22.000.

Briggs & Stratton Corp.: *See*—
Vollbrecht, Kenneth A., 4,355,253, Cl. 310-239.000.

Bright, Edward J.; and Kandybowski, Steven J., to AMP Incorporated. Dual-in-line package carrier and socket assembly. 4,354,718, Cl. 339-17.0CF.

Bristol-Myers Company: *See*—
Weinstein, Jack, 4,354,638, Cl. 239-337.000.

British Aerospace: *See*—
Wooding, Michael S., 4,354,346, Cl. 60-39.09P.

British Telecommunications: *See*—
Salter, Stuart R.; and Smith, David R., 4,355,395, Cl. 372-38.000.

Bro, William J. Thermal diffusion flow probe. 4,354,504, Cl. 128-691.000.

Broberg, Hans; Douren, Lars; and Troeng, John, to Aktiebolaget Bofors. Device for concentration and possible purification of mineral acids, particularly sulphuric acid. 4,354,899, Cl. 159-13.00A.

Brockway Glass Company, Inc.: *See*—
Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., 4,354,865, Cl. 65-29.000.

Broding, Robert A.: *See*—
Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.

Brown, Carl W.: *See*—
Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.

Brown, Donald C., to Heyman Manufacturing Company. Contact strip for electrical connector. 4,354,727, Cl. 339-256.00R.

Brown, Donald L.; and Calvert, Gareld D. Keg saddle. 4,354,599, Cl. 206-503.000.

Brown, James H.: *See*—
Hughey, Robert M.; Fairchild, James J.; and Brown, James H., 4,355,309, Cl. 340-825.530.

Brown & Williamson Tobacco Corporation: *See*—
Lewis, Robert T.; and Sexstone, John H., 4,354,894, Cl. 156-517.000.

Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.

BRS, Inc.: *See—*
Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.

Brun, Alain; Marcotte, Louis; and Szarazi, Bela, to L'Oreal. Method of and device for forming openings in a gelatinous substance. 4,354,406, Cl. 83-24.000.

Brunelli, Maurizio: *See—*
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.

Bruton, Billy R.; Corneillie Jerome E.; and Perkins, Marion W., to U.S. Industries, Inc. Fire-safe valve actuator. 4,354,425, Cl. 92-94.000.

Brutsman, James W., to AMF Incorporated. Adjustable dispenser. 4,354,605, Cl. 211-49.00D.

Bruyere, Alain: *See—*
Bompard, Bruno; and Bruyere, Alain, 4,354,888, Cl. 156-175.000.

Bryant Grinder Corporation: *See—*
Ambrose, Lawrence A., 4,354,329, Cl. 51-215.00H.

Buchanan, James C.; and Rutkowski, Edward V., Jr., to International Business Machines Corporation. Hyphen characterization apparatus for a typewriter. 4,354,765, Cl. 400-7.000.

Buckeye Cellulose Corporation, The: *See—*
Oliver, Don W., 4,354,486, Cl. 128-132.00D.

Buehl, Arnold L.; and Zwipf, Werner H., to Slyman Manufacturing Corporation. Non-air cooled radiant burner. 4,354,823, Cl. 431-328.000.

Buhrlen, Harold, to Meagher, James E. Ignition circuit for explosive devices and the like. 4,355,263, Cl. 315-209.00T.

Buiocchi, Charles J.: *See—*
Dholakia, Anil R.; and Buiocchi, Charles J., 4,355,382, Cl. 369-71.000.

Bujese, David P., to Pitney Bowes Inc. Copy paper feed mechanism. 4,354,759, Cl. 355-3.0SH.

Burgdorf, Jochen, to ITT Industries, Inc. Hydraulic brake-actuating device. 4,354,716, Cl. 303-119.000.

Burl, Michael: *See—*
Young, Ian R.; and Burl, Michael, 4,355,282, Cl. 324-309.000.

Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., to United States of America, Air Force. Method for testing and analyzing surface acoustic wave interdigital transducers. 4,355,278, Cl. 324-158.00R.

Burnstein, Philip J.: *See—*
Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.

Burris, Steven J.: *See—*
Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.

Burroughs Corporation: *See—*
Gould, Robert T. M., 4,355,376, Cl. 365-200.000.
Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.

Burroughs Wellcome Co.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.
Lazarus, Norman R., 4,355,025, Cl. 424-177.000.

Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., to Allen-Bradley Company. Motor heating control with interlocked dual isolating switches. 4,355,269, Cl. 318-436.000.

Burtt, Richard F.: *See—*
Murfitt, Robert R.; and Burtt, Richard F., 4,354,508, Cl. 128-798.000.

Bury, Cecil T., to David Brown Tractors, Ltd. Tractor engine air supply means. 4,354,458, Cl. 123-52.00M.

Busch, Lloyd E.: *See—*
Myers, George D.; and Busch, Lloyd E., 4,354,923, Cl. 208-113.000.

Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Huette. Process for filtering sludge-like materials in a filter press. 4,354,947, Cl. 210-790.000.

Butland, Peter. Process for producing a natural fruit candy. 4,355,050, Cl. 426-615.000.

Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., to Mobil Oil Corporation. Conversion of synthesis gas with iron-containing catalyst. 4,354,963, Cl. 252-455.00Z.

Butterwick, Gilbert N., to RCA Corporation. Photomultiplier tube having a stress isolation cage assembly. 4,355,258, Cl. 313-95.000.

Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., to International Business Machines Corp. Address generating mechanism for multiple virtual spaces. 4,355,355, Cl. 364-200.000.

Butz, David E., to Data Packaging Corporation. Disc pack with snap on handle. 4,355,340, Cl. 360-133.000.

Butz, Robert F.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.

Butzke, Jurgen: *See—*
Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.

Bytzek, Max: *See—*
Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.

C. F. Distributions, Inc.: *See—*
Meeder, Ernest P., 4,354,841, Cl. 434-157.000.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,354,557, Cl. 172-49.500.

Cable Technology Labs., Inc.: *See—*
Bahder, George, 4,354,992, Cl. 264-85.000.

Cabot Corporation: *See—*
Morgan, Allan C.; and Puckett, Dan K., 4,354,592, Cl. 198-703.000.

Cairo, Joseph A.: *See—*
Richardson, Gerry D.; and Cairo, Joseph A., 4,354,984, Cl. 261-66.000.

Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., to Otis Engineering Corporation. Well safety valve. 4,354,554, Cl. 166-321.000.

Callanan, Robert F.: *See—*
Soutsos, Michael D.; and Callanan, Robert F., 4,354,529, Cl. 138-96.00T.

Calundann, Gordon W.: *See—*
Charbonneau, Larry F.; and Calundann, Gordon W., 4,355,134, Cl. 524-605.000.
East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.
East, Anthony J.; and Calundann, Gordon W., 4,355,133, Cl. 524-604.000.

Calvert, Gareld D.: *See—*
Brown, Donald L.; and Calvert, Gareld D., 4,354,599, Cl. 206-503.000.

Calvert, Thomas J.: *See—*
Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.

Cameron Iron Works, Inc.: *See—*
Campbell, Frank, Jr., 4,354,824, Cl. 432-3.000.

Camp, Ronald L., to BASF Wyandotte Corporation. Thickening aqueous systems with alpha-olefin oxide-modified liquid polyether thickeners. 4,354,956, Cl. 252-316.000.

Camp, Vernon D., to Cavalier Corporation. Alternate column circuit reciprocator for multiple column vending machines. 4,354,616, Cl. 221-116.000.

Campagna, Anthony J.: *See—*
Wheeler, Edward S.; and Campagna, Anthony J., 4,355,200, Cl. 174-140.00S.

Campbell, Bruce D.; and Chapman, Lynn O., to Raychem Corporation. Apparatus for use in making a selectively vapor deposition coated tubular article. 4,354,456, Cl. 118-721.000.

Campbell, Frank, Jr., to Cameron Iron Works, Inc. Method and device for reducing heat flow from a workpiece to a skip pipe. 4,354,824, Cl. 432-3.000.

Canadian Stackpole Limited: *See—*
Total, Robert V., 4,354,887, Cl. 156-64.000.

Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., to Etat Francais represente par le Delegue General pour l'Armement. Hot-wire ignition initiator for propellant charges. 4,354,432, Cl. 102-202.700.

Cantello, Barrie C. C.; and White, Susan M., to Beecham Group Limited. Benzimidazoline derivatives and pharmaceutical compositions containing them. 4,355,004, Cl. 422-246.000.

Cantoni, Angelo, to Solar 77 S.p.A. Emulsifying assembly. 4,354,762, Cl. 366-160.000.

Cantwell, Thomas C.: *See—*
Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Eichinger, Johann, 4,354,846, Cl. 440-52.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,354,903, Cl. 201-6.000.

Carlson, David H. J., to UOP Inc. Catalytic composite and process for use. 4,354,926, Cl. 208-207.000.

Carlson, William P.: *See—*
Moravec, John V.; Carlson, William P.; and McGowan, Michael J., 4,354,418, Cl. 84-454.000.

Carlsson, Bror-Erland. Device for heating liquid for one or several washer systems. 4,354,548, Cl. 165-41.000.

Carone, Robert A. Hand gun with improved barrel mounting pin. 4,354,322, Cl. 42-75.00D.

Carpenter, Lindell O. Miniature collapsible kite and method of making same. 4,354,647, Cl. 244-153.00R.

Carrico, Robert J.: *See—*
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,355,165, Cl. 544-237.000.

Carte, Clyde R., to Valcour Imprinted Papers, Inc. Place mat producing and dispensing apparatus. 4,354,408, Cl. 83-162.000.

Caterpillar Tractor Co.: *See—*
Bianchetta, Donald L., 4,354,420, Cl. 91-6.000.
Dezelan, Joseph E., 4,354,351, Cl. 60-456.000.
Gudat, Adam J., 4,355,364, Cl. 364-565.000.
McMillan, William D., 4,354,527, Cl. 137-625.630.
Shoup, Stephen G., 4,354,692, Cl. 280-495.000.

Cavalier Corporation: *See—*
Camp, Vernon D., 4,354,616, Cl. 221-116.000.
Lindsey, James C., 4,354,615, Cl. 221-116.000.

Cederstrand, Carl N.: *See—*
Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.

Celanese Corporation: *See—*
Charbonneau, Larry F.; and Calundann, Gordon W., 4,355,134, Cl. 524-605.000.
East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.

East, Anthony J.; and Calundann, Gordon W., 4,355,133, Cl. 524-604.000.
Maxwell, Peter C., 4,355,107, Cl. 435-142.000.
Williams, Albert G., 4,354,994, Cl. 264-169.000.
Williams, Albert G., 4,355,152, Cl. 528-191.000.

Cello, Linda M.: *See—*
Smeltzer, Richard H.; and Cello, Linda M., 4,354,327, Cl. 47-58.000.

Chai, An-Ti, to United States of America, National Aeronautics and Space Administration. Solar cell having improved back surface reflector. 4,355,196, Cl. 136-259.000.

Chamberlain, Robert A., to Northwestern Ohio Tractor Pullers Assoc. Tractor pull sled. 4,354,390, Cl. 73-862.030.

Champion International Corporation: *See—*
Lavery, John J., 4,354,596, Cl. 206-45.310.
Roccaforte, Harry I., 4,354,630, Cl. 229-39.00R.
Schillinger, Joseph F., 4,354,598, Cl. 206-462.000.

Champion Spark Plug Europe S.A.: *See—*
Le Sausse, Robert T.; and Van den Berg, Johan H., 4,354,293, Cl. 15-250.320.

Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J. Electric arc apparatus. 4,355,262, Cl. 315-111.110.

Chan, David S. K., to Schlumberger Technology Corporation. Dipmeter data processing technique. 4,355,357, Cl. 364-422.000.

Chandler Evans Inc.: *See—*
Sundberg, Jack G., 4,354,809, Cl. 418-268.000.

Chang, David C., to Du Pont de Nemours, E. I., and Company. Clear coat/color coat finish containing ultraviolet light stabilizer. 4,355,071, Cl. 428-334.000.

Chapman, Lynn O.: *See—*
Campbell, Bruce D.; and Chapman, Lynn O., 4,354,456, Cl. 118-721.000.

Charbonneau, Larry F.; and Calundann, Gordon W., to Celanese Corporation. Wholly aromatic polyester capable of forming an anisotropic melt phase at an advantageously reduced temperature. 4,355,134, Cl. 524-605.000.

Charbonneau, Larry F.: *See—*
East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.

Charles, James A., to Dana Corporation. Speed change mechanism with load bearing saddle. 4,354,396, Cl. 74-104.000.

Charlton, Homer M.: *See—*
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.

Chaudhary, Vinod K.: *See—*
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,355,058, Cl. 427-386.000.

Chester, Arthur W.: *See—*
Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.

Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, to Deltaglass S.A. Photocured lamina of unsaturated urethane/monomer adhesive blend with a transparent layer. 4,355,077, Cl. 428-412.000.

Chevron Research Company: *See—*
Lewis, Robert T., 4,354,856, Cl. 55-3.000.
Miller, Stephen J., 4,354,924, Cl. 208-120.000.
Rosenthal, Joel W.; and Dahlberg, Arthur J., 4,354,920, Cl. 208-10.000.
Sherwood, John W. C., 4,355,379, Cl. 367-68.000.
Sweeney, W. Alan, 4,354,855, Cl. 44-56.000.

Chia, E. Henry: *See—*
Adams, Ronald D.; and Chia, E. Henry, 4,354,880, Cl. 148-2.000.

Chicoye, Etzer: *See—*
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, 4,355,178, Cl. 564-44.000.

Chiron, Bernard: *See—*
Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.

Chisum, Finis L. Tire bead demounting tool. 4,354,544, Cl. 157-1.170.

Chiu, Ran F.: *See—*
Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.

Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, to Montedison S.p.A. Process for preparing aryl- or heteroarylhexadienoic acids. 4,355,168, Cl. 546-341.000.

Chou, Yungnien J.: *See—*
Saam, John C.; and Chou, Yungnien J., 4,355,154, Cl. 528-274.000.

Chowdhury, Mofazzal H.; and Bliss, John W., to Farmhand, Inc. Slurry spreader with metering valves. 4,354,624, Cl. 222-608.000.

Christian, Albert, heir: *See—*
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Christian, David A., heir: *See—*
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Christian, John D., deceased: *See—*
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Christian, Martha R., heir: *See—*
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Christner, James E.: *See—*
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Chugai Seiyaku Kabushiki Kaisha: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Ciba-Geigy AG: *See—*
Becheiraz, Joseph, 4,354,755, Cl. 354-322.000.
Trautweiler, Franz, 4,355,099, Cl. 430-531.000.

Ciba-Geigy Corporation: *See—*
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,355,159, Cl. 542-417.000.
Reinehr, Dieter; and Pfeifer, Josef, 4,355,177, Cl. 564-36.000.

Ciccarelli, Roger N., to Xerox Corporation. Telomeric quaternary salt compositions. 4,355,167, Cl. 546-255.000.

Ciesla, Peter F.: *See—*
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,355,028, Cl. 424-230.000.

CITO Products, Inc.: *See—*
Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, 4,354,812, Cl. 425-144.000.

Clark, Forrest E.: *See—*
Goodell, Thomas W.; and Clark, Forrest E., 4,354,392, Cl. 73-863.860.

Clark, Gary T.: *See—*
Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., 4,354,970, Cl. 260-158.000.

Clark, James P., III: *See—*
Wysk, Stanley R.; and Clark, James P., III, 4,354,354, Cl. 60-655.000.

Claude, S.A.: *See—*
Franchet, Leon G., 4,355,345, Cl. 361-117.000.
Merli, Gian F., 4,355,264, Cl. 315-289.000.

Clelford, Douglas H.; and Fowler, Donald W., to United Technologies Corporation. Adaptive aircraft actuator fault detection. 4,355,358, Cl. 364-424.000.

Clements, Morris: *See—*
Clements, Ray; and Clements, Morris, 4,354,702, Cl. 294-9.000.

Clements, Ray; and Clements, Morris. Wood fire feeder. 4,354,702, Cl. 294-9.000.

Closser, Daniel D.: *See—*
Hix, Daniel H.; and Closser, Daniel D., 4,354,851, Cl. 8-471.000.

Coca-Cola Company, The: *See—*
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.

Cocron, Istvan: *See—*
Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.

Cohen, Abraham B.: *See—*
Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., 4,355,055, Cl. 427-96.000.

Cohen, Joel M. Stereo image separation and perimeter enhancement. 4,355,203, Cl. 179-1.00G.

Cohen, Sheppard; and Barakitis, Nikolaos, to GTE Products Corporation. Discharge lamp with integral starter. 4,355,261, Cl. 315-47.000.

Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., to GTE Products Corporation. Discharge lamp starting and operating circuit. 4,355,265, Cl. 315-290.000.

Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., to Honeywell Inc. Digital characterization of liquid gaging system sensors. 4,355,363, Cl. 364-509.000.

Coldren, Larry A.; and Furuya, Kazuhito, to Bell Telephone Laboratories, Incorporated. Method of preferentially etching optically flat mirror facets in InGaAsP/InP heterostructures. 4,354,898, Cl. 156-647.000.

Cole, Edward F.: *See—*
Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., 4,354,345, Cl. 60-39.080.

Cole, Herbert S., Jr., to General Electric Company. Surface alignment process for liquid crystal displays. 4,354,740, Cl. 350-340.000.

Colley, Peter S.; and Martin, Roy W., to University of Washington, The Board of Regents of The. System using ultrasonic energy for detection and quantification of air emboli. 4,354,500, Cl. 128-663.000.

Colley, Peter S.; and Martin, Roy W., to University of Washington, The Board of Regents of The. Esophageal catheter including ultrasonic

transducer for use in detection of air emboli. 4,354,501, Cl. 128-663.000.
Colley, Peter S.; and Martin, Roy W., to University of Washington, The Board of Regents of the. Intravascular catheter including untrasonic transducer for use in detection and aspiration of air emboli. 4,354,502, Cl. 128-663.000.
Colli, Luigi: *See*—
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, 4,354,343, Cl. 57-279.000.
Collins, John H.: *See*—
Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., 4,354,872, Cl. 106-14.270.
Collombin, Andre-Marcel, to Motosacoche S.A. Plant for producing containers by drawing-blowing of preforms in plastic material. 4,354,813, Cl. 425-182.000.
Colombo, Paolo: *See*—
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Combustion Engineering, Inc.: *See*—
Wysk, Stanley R.; and Clark, James P., III, 4,354,354, Cl. 60-655.000.
Commercial Shearing, Inc.: *See*—
Hodgson, Robert F., 4,354,526, Cl. 137-625.480.
Commissariat a l'Energie Atomique: *See*—
Bompard, Bruno; and Bruyere, Alain, 4,354,888, Cl. 156-175.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Holan, George; and O'Keefe, David F., 4,355,042, Cl. 424-285.000.
Hoskinson, Ronald M.; Cox, Ronald I.; and Wong, Michael S. F., 4,354,977, Cl. 260-397.400.
Winter, George, 4,355,137, Cl. 525-54.100.
Communications Satellite Corporation: *See*—
Deal, Joseph H., Jr., 4,355,388, Cl. 370-104.000.
Uzunoglu, Vasil, 4,355,404, Cl. 375-86.000.
Communications Technology Corporation: *See*—
Heinze, Richard E., 4,355,130, Cl. 524-491.000.
Compagnie Francaise de Raffinage: *See*—
Szabo, Georges, 4,354,962, Cl. 252-442.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
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Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,355,356, Cl. 364-200.000.
Concord Laboratories: *See*—
Raitto, Russell G., 4,354,507, Cl. 128-763.000.
Conger, Robert P.: *See*—
Palmer, Leon B.; and Conger, Robert P., 4,355,063, Cl. 428-89.000.
Congoleum Corporation: *See*—
Palmer, Leon B.; and Conger, Robert P., 4,355,063, Cl. 428-89.000.
Conoco Inc.: *See*—
Goldsmith, Riley G.; and Mercier, John A., 4,354,446, Cl. 114-230.000.
Consolidated Papers, Inc.: *See*—
Patterson, Harvey J., 4,354,452, Cl. 118-413.000.
Consort Project Developments Limited: *See*—
Dyke, Leslie A., 4,354,331, Cl. 52-66.000.
Continental Emsco Company: *See*—
Wudtke, Donald J ., 4,354,608, Cl. 212-191.000.
Contini, Giorgio, to Societa per Azioni Technogas Fabbrica Apparecchiature Termo-Electrodomestiche di Giorgio e Gianni F. llt Contini. Cooking hob, particularly for built-in assembly. 4,354,478, Cl. 126-39.00E.
Convergence Corporation: *See*—
Beeson, Gary H., 4,355,332, Cl. 360-14.100.
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., to International Business Machines Corporation. Instantaneous alpha content prescan method for automatic spelling error correction. 4,355,371, Cl. 364-900.000.
Cook, Donald M., to NCR Corporation. Real time clock recovery circuit. 4,355,398, Cl. 375-110.000.
Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., to General Motors Corporation. Motor reversing circuit for vehicle windshield wiper. 4,355,270, Cl. 318-443.000.
Cook, Steven R.: *See*—
Genter, Roland E.; and Cook, Steven R., 4,355,384, Cl. 370-64.000.
Cook, Willard G., Jr., to United Technologies Corporation. Dual wheel, tire pressure tester. 4,355,299, Cl. 340-58.000.
Cooper, Robin D. G.: *See*—
Koppel, Gary A.; and Cooper, Robin D. G., 4,355,172, Cl. 560-29.000.
Coppola, Richard G.: *See*—
Riggs, Richard L.; and Coppola, Richard G., 4,355,361, Cl. 364-464.000.
Coppus Engineerng Corporation: *See*—
LaBaire, William P., 4,354,801, Cl. 415-80.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Compatibilized polymer blends. 4,355,139, Cl. 525-133.000.
Cording, Richard W.; and Morton, Daniel D., to Bendix Corporation, The. Resolver processor with error detection. 4,355,305, Cl. 340-347.0SY.
Corneillie, Jerome E.: *See*—
Bruton, Billy R.; Corneillie, Jerome E.; and Perkins, Marion W., 4,354,425, Cl. 92-94.000.
Vanderburg, Ralph W.; and Corneillie, Jerome E., 4,354,663, Cl. 251-210.000.
Cornelius Company, The: *See*—
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, to Ruhrchemie Aktiengesellschaft. Process for the production of ethanol and n-propanol from methanol. 4,355,192, Cl. 568-902.000.
Cornish, James E., to Dravo Corporation. Train positioner. 4,354,792, Cl. 414-359.000.
Cornwell, Charles E. High temperature cementitious coatings with improved corrosion resistance and methods of application. 4,355,060, Cl. 427-427.000.
Cort, Joseph H. Method and feed for stimulating the growth of animals. 4,355,024, Cl. 424-177.000.
Cottatellucci, Ezio, to Societa Italiana Telecomunicazioni Siemens S.P.A. Frequency-stabilizing system for generator of microwave oscillations. 4,355,288, Cl. 331-12.000.
Coulter Systems Corporation: *See*—
Weber, Harold J., 4,355,300, Cl. 340-146.30C.
Cousin, Michel: *See*—
Meyer, Nicolas; and Cousin, Michel, 4,355,145, Cl. 526-195.000.
Cousins, William W. Method for producing a photomechanical color image using a strippable photostencil and water-permeable, water-insoluble color media. 4,355,095, Cl. 430-293.000.
Coutures, Jean-Louis: *See*—
Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, 4,355,244, Cl. 307-304.000.
Cox, Ronald I.: *See*—
Hoskinson, Ronald M.; Cox, Ronald I.; and Wong, Michael S. F., 4,354,977, Cl. 260-397.400.
Coyle, William E., Sr., to Bilco Tools, Inc. Dual string elevators. 4,354,706, Cl. 294-102.00A.
Credle, William S., Jr.: *See*—
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., to Mitel Corporation. Telephone call denial system. 4,355,208, Cl. 179-18.0DA.
Crozier, Ronald D. G. Process for producing alkyl xanthogen alkylformates. 4,354,980, Cl. 260-455.00B.
Cruzen, Gerald S., to Williams Research Corporation. Composite turbine wheel, method of manufacture and fixture therefor. 4,354,804, Cl. 416-230.000.
Cuneo, Giuseppe: *See*—
Alessio, Lorenzo E.; and Cuneo, Giuseppe, 4,355,251, Cl. 310-155.000.
Curtin, William J., to Amtel Communications, Inc. Telephone answering system. 4,355,207, Cl. 179-18.0FC.
Cuscino, Richard T.: *See*—
Tomlinson, Leroy O.; and Cuscino, Richard T., 4,354,347, Cl. 60-39.18B.
Cushing, Donald S., to General Electric Company. Switch inhibitor for timers. 4,355,217, Cl. 200-38.00R.
Cuvillier, Roger: *See*—
Picquet, Jean M.; Picquet, Lambert; and Cuvillier, Roger, 4,354,733, Cl. 350-51.000.
D and D S.r.l.: *See*—
Reiner, Alberto, 4,355,166, Cl. 544-268.000.
D. Gottlieb & Co.: *See*—
Garbark, Roman F., 4,354,681, Cl. 273-121.00R.
Daar, Horst: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
Daetwyler, Jurg: *See*—
Achermann, Heinz; and Daetwyler, Jurg, 4,354,764, Cl. 374-56.000.
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, to Officine Savio S.p.A. Automatic take-in for double-twisting spindles. 4,354,343, Cl. 57-279.000.
Dahlberg, Arthur J.: *See*—
Rosenthal, Joel W.; and Dahlberg, Arthur J., 4,354,920, Cl. 208-10.000.
Dahms, Harald. Karl Fischer reagent and its use. 4,354,853, Cl. 23-230.00R.
Daiichi Kashuha Kogyo Kabushiki Kaisha: *See*—
Terasaki, Masanori, 4,354,883, Cl. 148-127.000.
Daimler-Benz Aktiengesellschaft: *See*—
Puchas, Christian, 4,354,567, Cl. 180-73.00C.
Dalla Betta, Ralph A.; and Zimmerlin, Sharon L., to Babcock & Wilcox Company, The. Method of manufacturing a combustibles sensor. 4,355,056, Cl. 427-126.400.
Damadian, Raymond V. Apparatus and method for nuclear magnetic resonance scanning and mapping. 4,354,499, Cl. 128-653.000.
Dams, Michael J., to Dow Corning Limited. Organopolysiloxane elastomer-forming compositions. 4,355,129, Cl. 524-435.000.
Dana Corporation: *See*—
Baker, Willard C., 4,354,400, Cl. 74-687.000.
Charles, James A., 4,354,396, Cl. 74-104.000.
Danfoss A/S: *See*—
Madsen, Ingvard M.; and Andersen, Niels L., 4,354,822, Cl. 431-208.000.
Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process for preparing methacrylic acid and its lower alkyl esters. 4,355,176, Cl. 562-599.000.
Dason International Products Inc.: *See*—
Abrahamson, David M., 4,354,443, Cl. 112-440.000.

Data Packaging Corporation: *See*—
Butz, David E., 4,355,340, Cl. 360-133.000.

Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., to Motor Wheel Corporation. Method of wheel manufacture for correcting rotational non-uniformity of a pneumatic tire and wheel assembly and apparatus for performing such method. 4,354,407, Cl. 83-55.000.

David Brown Tractors, Ltd.: *See*—
Bury, Cecil T., 4,354,458, Cl. 123-52.00M.

Davies, Ronald C., to Third Wave Electronics Company, Inc. Coin acceptor or rejector. 4,354,587, Cl. 194-100.00A.

Davis, Alan R.: *See*—
Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., 4,354,705, Cl. 294-86.0CG.

Davis, Walter L.; and Jacobson, James E., Jr., to Motorola, Inc. Dual mode DC/DC converter. 4,355,277, Cl. 323-351.000.

Dayco Corporation: *See*—
Standley, Paul M., 4,355,069, Cl. 428-292.000.

Deal, Joseph H., Jr., to Communications Satellite Corporation. Microprogrammable TDMA terminal controller. 4,355,388, Cl. 370-104.000.

De Boer, Rudolf: *See*—
Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, 4,355,048, Cl. 426-40.000.

DeCosta, John; Mallos, James B.; and Roe, David B., to Bell Telephone Laboratories, Incorporated. Mounting arrangement for a position locating system. 4,355,202, Cl. 178-18.000.

Deguchi, Hideaki, to Kabushiki Kaisha Komatsu Seisakusho. Bending press. 4,354,374, Cl. 72-389.000.

Degussa Aktiengesellschaft: *See*—
Heckel, Emil; Seys, Freddy; Baeckelmans, Rene; and Heilmann, Wolfgang, 4,355,015, Cl. 423-336.000.

Dehmer, Klaus: *See*—
Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.

Dehne, Clarence A., to Jervis B. Webb Company. Track and switch construction for self-propelled vehicles. 4,354,434, Cl. 104-103.000.

Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., to Bausch & Lomb Incorporated. Polysiloxane with polycyclic modifier composition and biomedical devices. 4,355,147, Cl. 526-264.000.

Dekker, Lambert: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.

Delasantos, Clifford J.; and Rasmussen, Peter J. Wheel chocking assembly. 4,354,580, Cl. 188-4.00R.

Delmer, William M. Multiple chamber drip irrigation hose. 4,354,639, Cl. 239-542.000.

DeLong, Donald C., to Eli Lilly and Company. Antiviral combinations. 4,355,030, Cl. 424-250.000.

Deltaglass S.A.: *See*—
Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.

DeLucia, Victor E. Electrical contactor for terminal pin. 4,354,728, Cl. 339-256.00S.

Demange, Michel; and Septier, Louis, to Societe Francaise d'Electrometallurgie-SOFREM. Process for the desiliconization of manganese alloys. 4,354,868, Cl. 75-60.000.

Demerson, Christopher A.; and Jirkovsky, Ivo L., to American Home Products Corp. 2,3-Dihydro-3-[4-(substituted)-1-piperazinyl]-1H-isoindol-1-ones. 4,355,031, Cl. 424-250.000.

de Montigny, Armand; Illiger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of polysiloxane/polyoxyalkylene copolymer useful as stabilizers in making polyurethane foams. 4,355,171, Cl. 556-446.000.

DeMott, Roy P., to Milliken Research Corporation. Soil-resistant textile materials. 4,355,065, Cl. 428-195.000.

De Muynck, Gabriel, to Bekaert Engineering. Rotary tool positioning unit for a woodworking machine. 4,354,798, Cl. 414-750.000.

Dennis, Charles L.; and Harrell, John W., to Mobil Oil Corporation. Logging system depth recorder. 4,355,378, Cl. 367-33.000.

Dennis, Joseph W. Bed frame with pyramid shaped platform supports. 4,354,288, Cl. 5-400.000.

Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., to Mobil Oil Corporation. Processing of heavy hydrocarbon oils. 4,354,922, Cl. 208-68.000.

Desai, Mahendrakumar D.; and Shuren, Thomas E., to Trafalgar Industries, Inc. Microprocessor based vending apparatus. 4,354,613, Cl. 221-4.000.

DeSantis, Urbano J.: *See*—
Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., 4,354,865, Cl. 65-29.000.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,354,414, Cl. 84-1.240.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Adaptive metronome for an automatic rhythm generator. 4,354,412, Cl. 84-1.010.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Constant speed polyphonic portamento system. 4,354,414, Cl. 84-1.240.

Deutsche Calypsolgesellschaft mbH & Co.: *See*—
Kieber, Lothar, 4,354,574, Cl. 184-1.500.

de Vecchis, Michel: *See*—
Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.

Deyber, Paul: *See*—
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.

Dezelan, Joseph E., to Caterpillar Tractor Co. Load sensing steering. 4,354,351, Cl. 60-456.000.

Dholakia, Anil R.; and Buiocchi, Charles J., to RCA Corporation. Apparatus for sharpening a cutting stylus. 4,355,382, Cl. 369-71.000.

Diamond Shamrock Corporation: *See*—
Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
Pohto, Gerald R., 4,354,916, Cl. 204-253.000.
Powers, Larry J.; and Vickers, Thomas M., 4,354,875, Cl. 106-74.000.
Solomon, Frank, 4,354;917, Cl. 204-284.000.
Solomon, Frank, 4,354,958, Cl. 252-425.300.
Vickers, Thomas M., 4,354,874, Cl. 106-74.000.

Dick, Elliot C.: *See*—
Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., 4,355,021, Cl. 424-28.000.

Dickinson, Harry D. Motorized curb barrier traffic-way controller. 4,354,771, Cl. 404-6.000.

Diedrich, Orville J. Mechanism for cleaning subfloor of livestock confinement unit. 4,354,593, Cl. 198-718.000.

Diekhaus, Gerhard: *See*—
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.

Diepers, Heinrich; and Niewisch, Joachim, to Siemens Aktiengesellschaft. Method for nondestructive material testing with ultrasound pulses. 4,354,388, Cl. 73-612.000.

Diesel Kiki Company, Ltd.: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
Sugiura, Hiroyuki, 4,354,547, Cl. 165-25.000.

Digital Switch Corporation: *See*—
Genter, Roland E.; and Cook, Steven R., 4,355,384, Cl. 370-64.000.

Direct Reduction Corporation, The: *See*—
Goodell, Thomas W.; and Clark, Forrest E., 4,354,392, Cl. 73-863.860.

Dixon, Bernard, to Dixon International Limited. Method of making intumescent seals. 4,354,304, Cl. 29-527.100.

Dixon International Limited: *See*—
Dixon, Bernard, 4,354,304, Cl. 29-527.100.

Dobry, Alan M., to Standard Oil Company (Indiana). Clarification of ammonium polyphosphate solutions. 4,354,943, Cl. 210-727.000.

Dobry, Alan M., to Standard Oil Company (Indiana). Clarification of ammonium polyphosphate solutions. 4,354,944, Cl. 210-727.000.

Dr. Barth GmbH: *See*—
Noack, Fritz, 4,354,773, Cl. 404-41.000.

Docutel Corporation: *See*—
Garvin, Billy R., 4,355,369, Cl. 364-900.000.

Dodd, Thomas C.; and Emerson, John A., to Western Electric Company Inc. Method of selectively depositing a metal on a surface by means of sputtering. 4,354,911, Cl. 204-192.0EC.

Doeinghaus, Herman: *See*—
Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.

Doemer, Josef; and Thanhaeuser, Gerhard, to Siemens Aktiengesellschaft. Transmitting amplifier for a remote fed intermediate regenerator. 4,355,400, Cl. 375-4.000.

Doi, Toshitada; and Iga, Akira, to Sony Corporation. Burst-error correcting system. 4,355,392, Cl. 371-45.000.

Dolby Laboratories Licensing Corporation: *See*—
Dolby, Ray M., 4,355,383, Cl. 369-120.000.

Dolby, Ray M., to Dolby Laboratories Licensing Corporation. Apparatus for scanning variable area optical sound tracks by parallel processing discrete photosensor outputs. 4,355,383, Cl. 369-120.000.

Dolenc, Bozidar: *See*—
Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, 4,354,940, Cl. 210-698.000.

Dolling, Ulf H., to Merck & Co., Inc. Preparation of 5(halophenyl)salicylic acid compounds. 4,355,174, Cl. 562-469.000.

Dombroski, John R.; and Light, Fred W., Jr., to Eastman Kodak Company. Solvent-resistant unsaturated polyester compositions. 4,355,136, Cl. 525-35.000.

Dooley, James L.: *See*—
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.

Dorer, Wilfried; Fuss, Manfred; and Lehmann, Werner, to Mathias Bauerle GmbH. Device for distributing flexible sheets in collecting bins. 4,354,674, Cl. 271-296.000.

Dorn, Conrad P.: *See*—
Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.

Dorn, Friedrich-Wilhelm: *See*—
Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.

Dotsko, Martin; Klemm, Robert E.; and Peters, David L., to Singer Company, The. Variable gain screen permitting off-axis viewing with image brightness remaining constant. 4,354,737, Cl. 350-117.000.

Dougherty, Lawrence W., to Zenith Radio Corporation. Shadow mask suspension means for color cathode ray picture tubes. 4,355,260, Cl. 313-404.000.

Dougherty, William R.: *See*—
Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.

Douren, Lars: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,354,899, Cl. 159-13.00A.

Dow Chemical Company, The: *See*—
Willis, Stephen B., Jr.; and Henry, Joseph D., 4,355,181, Cl. 564-477.000.
Zingg, Warren M., 4,354,552, Cl. 166-90.000.

Dow Corning Corporation: *See*—
Bartos, Donald M., 4,354,488, Cl. 128-205.250.
January, James R., 4,355,135, Cl. 524-767.000.
Saam, John C.; and Chou, Yungnien J., 4,355,154, Cl. 528-274.000.

Dow Corning GmbH: *See*—
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.

Dow Corning Limited: *See*—
Dams, Michael J., 4,355,129, Cl. 524-435.000.

Drag Specialties, Inc.: *See*—
Rudd, Thomas H., 4,354,285, Cl. 2-424.000.

Dravo Corporation: *See*—
Cornish, James E., 4,354,792, Cl. 414-359.000.

Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., to United Technologies Corporation. Fuel heating system for gas turbine engine. 4,354,345, Cl. 60-39.080.

Drexler, Joannes H. Road post or reflector post. 4,354,772, Cl. 404-10.000.

Dreyfus, Gerard: *See*—
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,355,235, Cl. 250-376.000.

Driscoll, Barry J., to Bendix Corporation, The. Electrical resistance apparatus having integral shorting protection. 4,355,293, Cl. 338-184.000.

Drone, Gary A., to Fiat Allis North America, Inc. Electric vehicle performance sensor and shift point indicator. 4,355,296, Cl. 340-52.00R.

Dudgeon, Charles D., to General Electric Company. Cured polyester compositions and process for their production. 4,355,123, Cl. 523-511.000.

Dudley, Carl K.; and Roberts, William J., to Eltra Corporation. Idle speed controller. 4,354,466, Cl. 123-339.000.

Dungs, Horst: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,354,903, Cl. 201-6.000.

Dunn, Floyd, to Dysan Corporation. Rigid magnetic disc stacker. 4,354,603, Cl. 211-1.500.

Dunn, Wendell E., Jr. Two stage chlorination process for aluminum value containing source. 4,355,007, Cl. 423-79.000.

Dunn, Wendell E., Jr., to Reynolds Metals Company. Chlorination process. 4,355,008, Cl. 423-79.000.

Du Pont de Nemours, E. I., and Company: *See*—
Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., 4,355,055, Cl. 427-96.000.
Chang, David C., 4,355,071, Cl. 428-334.000.
Mouissie, Bob, 4,354,731, Cl. 350-96.210.
Myers, Melvyn J., 4,355,041, Cl. 424-273.00R.
Pechhold, Engelbert, 4,355,119, Cl. 521-159.000.
Wheeler, James W., 4,355,098, Cl. 430-510.000.

Durance, Robert A.: *See*—
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.

Durand, Yves: *See*—
Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.

Durlach, Jean P., to Les Laboratoires Meram. Novel derivatives of 3-aminopropanesulfonic acid having a reinforced activity on membrane. 4,355,043, Cl. 424-289.000.

Durst, Richard R.: *See*—
Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.

Dutra, Joseph G., Jr. Load stabilizer assembly with pivotal mount for a forklift truck. 4,354,795, Cl. 414-622.000.

DuVall, Wilbur E., to Xerox Corporation. Servo capture system. 4,355,273, Cl. 318-561.000.

Duzich, John J., to Grumman Aerospace Corporation. Accumulator condition indicator with spring biasing to indicate linear displacement of a piston. 4,355,280, Cl. 324-207.000.

Dyke, Leslie A., to Consort Project Developments Limited. Collapsable structures. 4,354,331, Cl. 52-66.000.

Dysan Corporation: *See*—
Dunn, Floyd, 4,354,603, Cl. 211-1.500.

Eakin, Lourie L. Cigarette snuffer. 4,354,510, Cl. 131-235.00R.

Easley, Othel D., Jr., to Reactor Services International, Inc. Pressure/demand exhalation valve. 4,354,520, Cl. 137-543.230.

East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., to Celanese Corporation. Anisotropic melt phase forming poly(esteramide) derived from p-hydroxybenzoic acid, 2,6-naphthalenedicarboxylic acid, aromatic monomer capable of forming an amide linkage, and, optionally, hydroquinone and additional carbocyclic dicarboxylic acid. 4,355,132, Cl. 524-602.000.

East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid, 4-hydroxy benzoic acid, 1,4-cyclohexanedicarboxylic acid, and aromatic diol capable of readily undergoing melt processing to form articles possessing high impact properties. 4,355,133, Cl. 524-604.000.

Eastman Kodak Company: *See*—
Dombroski, John R.; and Light, Fred W., Jr., 4,355,136, Cl. 525-35.000.
Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., 4,354,970, Cl. 260-158.000.
Gysling, Henry J.; and Gardner, Sylvia A., 4,355,097, Cl. 430-495.000.
Martin, Thomas W., 4,355,087, Cl. 430-7.000.
Zannucci, Joseph S., 4,355,080, Cl. 428-483.000.

Ebauches, S.A.: *See*—
Huguenin, Freddy; and Wattenhofer, Jean-Pierre, 4,355,380, Cl. 368-71.000.

Ebihara, Yasunori: *See*—
Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.

Eblen, James H. Fishing rod holding device. 4,354,324, Cl. 43-15.000.

Echlin Inc.: *See*—
Edwards, Norman, 4,354,713, Cl. 303-8.000.

Edmundowicz, John M.; and Allanson, Ernest E., to Eli Lilly and Company. Non-extractive penicillin V recovery process. 4,354,971, Cl. 260-239.100.

Edwards, Norman, to Echlin Inc. Dual area metering valve with variable reaction assembly. 4,354,713, Cl. 303-8.000.

Edwards, Thomas C.: *See*—
Shank, Wayne C.; and Edwards, Thomas C., 4,354,807, Cl. 418-13.000.

Eeda, Menoru: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.

Eggers, Carl A.; and Galvin, Gerald D., to Shell Oil Company. Hydraulic fluid, hydraulic equipment containing this fluid and a concentrate of this fluid. 4,354,949, Cl. 252-39.000.

Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, to Massachusetts General Hospital, The. Antibody fragment compositions and process. 4,355,023, Cl. 424-85.000.

Eichbaum, Gerhard; and Heidemann, Wolfgang, to Mannesmann DeMag A.G. Lining apparatus for metallurgical vessels, particularly for steel mill converters and/or blast furnaces. 4,354,670, Cl. 266-281.000.

Eichholz, Heinz. Electric vehicle. 4,354,569, Cl. 180-211.000.

Eichinger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Nonsteerable drive mechanism for a watercraft. 4,354,846, Cl. 440-52.000.

Ejiri, Hiroshi: *See*—
Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, 4,354,306, Cl. 29-568.000.

Electric Power Research Institute, Inc.: *See*—
Hingorani, Narain G., 4,355,241, Cl. 307-102.000.
Lin, Kou C., 4,355,221, Cl. 219-10.430.

Electromark, Div. of Mohawk International Inc.: *See*—
Szeliga, Philip C., 4,354,914, Cl. 204-224.00R.

Eli Lilly and Company: *See*—
DeLong, Donald C., 4,355,030, Cl. 424-250.000.
Edmundowicz, John M.; and Allanson, Ernest E., 4,354,971, Cl. 260-239.100.
Koppel, Gary A.; and Cooper, Robin D. G., 4,355,172, Cl. 560-29.000.
Ridolfo, Anthony S., 4,355,029, Cl. 424-232.000.

Ellis, Ben B., Sr.: *See*—
Langdon, Joel A., 4,354,282, Cl. 2-115.000.

Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, to AES Technology Systems, Inc. Method and apparatus for transferring envelopes. 4,354,789, Cl. 414-104.000.

Ellis, Theron L., to International Business Machines Corporation. Method for making laminated multilayer circuit boards. 4,354,895, Cl. 156-631.000.

Eloff, Carl J.: *See*—
Warlick, Frank M.; and Eloff, Carl J., 4,354,946, Cl. 210-774.000.

Eltra Corporation: *See*—
Dudley, Carl K.; and Roberts, William J., 4,354,466, Cl. 123-339.000.

Ema, Sumio: *See*—
Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, 4,354,693, Cl. 280-714.000.

Emck, Adrian J.: *See*—
Griffin, Gerald J. L.; and Emck, Adrian J., 4,354,879, Cl. 106-163.00R.

Emerson, John A.: *See*—
Dodd, Thomas C.; and Emerson, John A., 4,354,911, Cl. 204-192.0EC.

Emerson, Martha M.: *See*—
Huffman, Carl F.; and Emerson, Martha M., 4,355,191, Cl. 568-827.000.

Endo, Hisao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Engelsmann, Dieter: *See*—
Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.

Ennis, George T., to N/S Car Wash Enterprises, Inc. Spring coupled brush assembly for vehicle washing apparatus. 4,354,291, Cl. 15-53.0AB.

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Kohonen, Raimo, 4,354,934, Cl. 210-386.000.
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McRee, Robert E., Jr., 4,354,440, Cl. 110-346.000.
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Vohringer, Gerhard F.; and Hestermann, Gerhard, 4,354,451, Cl. 118-326.000.
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Essex Group, Inc.: *See*—
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Estes, James W., to Airco, Inc. Methods and apparatus for calcining carbonaceous material. 4,354,829, Cl. 432-117.000.
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Johnson, Jack W.; and Jacobson, Allan J., 4,355,161, Cl. 544-181.000.
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Noack, Fritz, 4,354,773, Cl. 404-41.000.
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Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
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Mercer, James B., 4,355,128, Cl. 524-423.000.
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Chowdhury, Mofazzal H.; and Bliss, John W., 4,354,624, Cl. 222-608.000.
Farr, Glyn P. R.; and Mortimer, Ivan, to Lucas Industries Limited. Hydraulic anti-skid braking systems for vehicles. 4,354,715, Cl. 303-116.000.
Farrer, Michael, to Gould Advance Limited. Power supply apparatus. 4,355,353, Cl. 363-21.000.
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Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael, 4,354,364, Cl. 68-18.00R.
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Feldman, Brian. Spacial orientation instruction device. 4,354,843, Cl. 434-236.000.
Feldstein, Nathan. Electrolessly metallized silver coated article. 4,355,083, Cl. 428-621.000.
Felici, Maurizio; and Menniti, Pietro, to SGS-ATES Componenti Elettronici S.p.A. Protective device electronic semiconductor component. 4,355,344, Cl. 361-103.000.
Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., to Mine Safety Appliances Company. Stable infrared analyzer. 4,355,234, Cl. 250-343.000.
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Drone, Gary A., 4,355,296, Cl. 340-52.00R.
Fiat Societa per Azioni: *See*—
Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
Fiber-Metal Products Company, The: *See*—
Walters, Eugene G., Jr.; and Ruck, Heinz E., 4,354,279, Cl. 2-8.000.
Filipowicz, Maciej K.; and Hayes, Cecil, to W. M. Still & Sons Limited. Coffee and tea making or brewing apparatus. 4,354,427, Cl. 99-307.000.
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., to Burroughs Wellcome Co. Radioactive nuclide labeled propiophenone compounds. 4,355,179, Cl. 564-177.000.
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Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing cylinder engagement pressure regulating system. 4,354,431, Cl. 101-247.000.
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Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., to McNally Pittsburg Mfg. Corp. Method and apparatus for drying coal. 4,354,825, Cl. 432-14.000.
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Powell, Robert Y.; and Fisher, Jeff A., 4,354,535, Cl. 140-93.00A.
Fiske, Herbert E. Automatic machine for making crushed ice. 4,354,360, Cl. 62-320.000.
Fitzgibbon, James J.; and Sutton, Leroy, to Zenith Radio Corporation. Dimmer and dimmer override control for a display device. 4,355,334, Cl. 358-168.000.
Fix, Paul W. Sucker rod shock absorber. 4,354,397, Cl. 74-108.000.
Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., to Eastman Kodak Company. Indoline coupled isothiazole azo dyes. 4,354,970, Cl. 260-158.000.
Fluck, Rene, to SIG Schweizerische Industrie-Gesellschaft. Method and apparatus for grouping flat items in stacks. 4,354,589, Cl. 198-419.000.
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Hwang, Yeongming; Han, Ching C.; and Ford, David F., 4,355,316, Cl. 343-840.000.
Ford, David F.: *See*—
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Forehand, Frederic N.; and Mecklenborg, Richard A., to Singer Company, The. Fron: projection screen with precision gain control. 4,354,738, Cl. 350-126.000.
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Volk, Hans-Joachim; and Forkel, Michael, 4,354,696, Cl. 280-804.000.
Fowler, Donald W.: *See*—
Clelford, Douglas H.; and Fowler, Donald W., 4,355,358, Cl. 364-424.000.
Frampton, Orville D.; and Baugh, William D., to National Distillers & Chemical Corp. Process for preparing alpha-methyl monobasic acid and esters thereof. 4,354,978, Cl. 260-410.90R.
Franchet, Leon G., to Claude, S.A. High current draining capacity micro-lightning arrester. 4,355,345, Cl. 361-117.000.
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Franke, Helmut: *See*—
Birkenbach, Alfred; and Franke, Helmut, 4,354,581, Cl. 188-71.900.
Franz, James H., Jr.; and Jones, Stanley W., to Westinghouse Electric Corp. Propulsion motor control apparatus. 4,355,267, Cl. 318-89.000.
Franzolini, Luciano, to Sp. El. s.r.l. Power circuit including means for automatically protecting a chopping transistor thereof. 4,355,342, Cl. 361-91.000.
Fraschini, Mario. Thermometric compositions for measuring and indicating low temperatures and related thermometric devices. 4,354,385, Cl. 374-162.000.
Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., to BRS, Inc. Athletic shoe with heel stabilizer. 4,354,318, Cl. 36-30.00R.
Frederick Electronics Corporation: *See*—
Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
Fredman, Harry. Bed frame with adjustable headboard engager or engager-extender. 4,354,287, Cl. 5-185.000.
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Friends, Gary D.: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,355,147, Cl. 526-264.000.
Friese, Karl-Hermann, to Robert Bosch GmbH. Solid electrochemical sensor. 4,354,912, Cl. 204-195.00S.
Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, to Bayer Aktiengesellschaft. Apparatus for colorimetrically measuring traces of gas. 4,354,854, Cl. 23-232.00R.
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Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.
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Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,354,635, Cl. 239-11.000.
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Fuchs, Christian: *See*—
Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

Fuderer, Andrija: *See*—
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Fuji Electric Co., Ltd.: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
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Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.
Fujimura, Katsunori: *See*—
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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
Fujita, Kinya. Orthodontic appliance. 4,354,833, Cl. 433-20.000.
Fujita, Masanori; and Owa, Yoshihito, to Seikosha Co., Ltd. Electronic timepiece with electro-optic display. 4,355,381, Cl. 368-187.000.
Fujita, Teruhiro, to Toyo Kogyo Co., Ltd. Air intake arrangement for diesel engine. 4,354,464, Cl. 123-323.000.
Fujitsu Fanuc Limited: *See*—
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,355,362, Cl. 364-474.000.
Fujitsu Limited: *See*—
Arakawa, Hideki, 4,355,375, Cl. 365-185.000.
Isogai, Hideaki, 4,355,245, Cl. 307-455.000.
Nakajima, Makoto, 4,354,897, Cl. 156-643.000.
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Fukui, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray television system. 4,355,230, Cl. 358-111.000.
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Funk nee Gabler, Inge, legal representative: *See*—
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Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Hypotensive imidazole-5-acetic acid derivatives. 4,355,040, Cl. 424-273.00R.
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Futaki, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure control device for a photocopier. 4,354,758, Cl. 355-14.00E.
G.D. Searle & Co.: *See*—
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Gabler, Reinhold, deceased: *See*—
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Gaddy, James L.; and Sitton, Oliver C., to University of Missouri, The Curators of the. Ethanol production with an immobilized cell reactor. 4,355,108, Cl. 435-165.000.
GAF Corporation: *See*—
Nelsen, Suzanne B., 4,355,155, Cl. 528-301.000.
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., to International Harvester Co. Polyimide foams. 4,355,120, Cl. 521-189.000.
Gaidis, James M.: *See*—
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Galloway, Robert C. Flexible conveyor system. 4,354,594, Cl. 198-743.000.
Galvin, Gerald D.: *See*—
Eggers, Carl A.; and Galvin, Gerald D., 4,354,949, Cl. 252-39.000.
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., to Westinghouse Electric Corp. Ceramic greenware support. 4,354,830, Cl. 432-258.000.
Gamson, Bernard W.; and Hayden, Howard W., Jr., to Martin Marietta Corporation. Aluminum electrolytic cell cathode waste recovery. 4,355,017, Cl. 423-484.000.
Garbark, Roman F., to D. Gottlieb & Co. Drop target assembly for pinball game. 4,354,681, Cl. 273-121.00R.
Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., to International Business Machines Corp. Method of manufacturing a metal-insulator-semiconductor device utilizing a graded deposition of polycrystalline silicon. 4,354,309, Cl. 29-571.000.
Gardner, Beth Ann: *See*—
Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., 4,355,037, Cl. 424-267.000.
Gardner, Sylvia A.: *See*—
Gysling, Henry J.; and Gardner, Sylvia A., 4,355,097, Cl. 430-495.000.
Garnier, Andre. Gas-tight connector. 4,354,785, Cl. 414-8.000.
Garrod, Norman J. Covers for cassette boxes. 4,354,597, Cl. 206-387.000.
Gartland, Albert J., Jr., to Harvey Hubbell Incorporated. Screw retaining and aligning cover plate. 4,355,198, Cl. 174-66.000.
Garvin, Billy R., to Docutel Corporation. Automatic banking machine. 4,355,369, Cl. 364-900.000.
Gash, Duggan J., to Koninklijke Emballage Industrie Van Leer, B.V. Dry lamination. 4,355,076, Cl. 428-411.000.
Gates Learjet Corporation: *See*—
Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.
Gauger, Gary A.; and Mason, Marco J., to McGraw-Edison Company. Electrical apparatus having an improved dielectric system. 4,355,346, Cl. 361-318.000.
Geithman, Glenn A.; and Olsen, Donald F., to Boeing Company, The. Induction heater and apparatus for use with stud mounted hot melt fasteners. 4,355,222, Cl. 219-10.570.
Gelber, Robert M.: *See*—
Scanlon, Robert T.; and Gelber, Robert M., 4,354,739, Cl. 350-311.000.
General Atomic Company: *See*—
Ohkawa, Tihiro, 4,354,998, Cl. 376-140.000.
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Cole, Herbert S., Jr., 4,354,740, Cl. 350-340.000.
Cushing, Donald S., 4,355,217, Cl. 200-38.00R.
Dudgeon, Charles D., 4,355,123, Cl. 523-511.000.
Evans, Edwin R., 4,355,121, Cl. 523-213.000.
Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.
Haaf, William R.; and Reinhard, Donald L., 4,355,126, Cl. 524-411.000.
Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., 4,354,725, Cl. 339-214.00R.
Kumar, Tribhawan; and Wolpert, Kris E., 4,354,858, Cl. 55-6.000.
Langdon, Robert S., 4,355,250, Cl. 310-88.000.
Lee, Yue-Guey L.; and Zamek, Otto S., 4,354,965, Cl. 524-104.000.
Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.
Losert, Gerhard K., 4,354,384, Cl. 374-134.000.
Tomlinson, Leroy O.; and Cuscino, Richard T., 4,354,347, Cl. 60-39.18B.
General Foods Corporation: *See*—
Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.
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Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., 4,355,270, Cl. 318-443.000.
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Wise, Richard M., 4,355,131, Cl. 524-504.000.
Gensike, Karl H.; and Marsh, Robert C., to Photomatrix Corp. Microfiche collating stacker. 4,354,787, Cl. 414-54.000.
Genter, Roland E.; and Cook, Steven R., to Digital Switch Corporation. Non-blocking expandable switching matrix for a telecommunication system. 4,355,384, Cl. 370-64.000.
George, John B.; and Testin, William J., to RCA Corporation. Tuning mode arrangement useful for restricting channel selection to certain channels. 4,355,415, Cl. 455-185.000.
George Weston Limited: *See*—
Lawford, Hugh G., 4,355,106, Cl. 435-101.000.
Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., to General Electric Company. X-ray image subtracting system. 4,355,331, Cl. 358-111.000.
Georgia Tech Research Institute: *See*—
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Geyer, Gerhard; and Kuschmierz, Heinz, to Robert Bosch GmbH. Injection instant adjuster for internal combustion engines. 4,354,473, Cl. 123-501.000.

Giachello, Angelo: *See—*
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Giesenberg, Peter, to Bodenseewerk Geratetechnik GmbH. Device for righting and stabilizing a gyro vertical. 4,354,394, Cl. 74-5.440.
Gill, Dorothy E.: *See—*
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Gill, John B.; and Gill, Dorothy E. Heavy duty tube wringing device. 4,354,623, Cl. 222-102.000.
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Beisecker, Mark B., 4,354,482, Cl. 126-409.000.
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Gilman, Robert W., to Ingersoll-Rand Company. Composite extrusion die. 4,354,817, Cl. 425-331.000.
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Girod, Hansjochen: *See—*
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Giusti, Giampiero. Automatic system for the formation and distribution of layers of groups of sheets. 4,354,788, Cl. 414-55.000.
Glaser, Joseph, II. Tone changer for stringed instrument. 4,354,417, Cl. 84-312.00R.
Glavas, Xenophon; G.; and Thompson, Robert E., to International Telephone and Telegraph Corporation. Collapsible mandrel for precise winding of a coil. 4,354,645, Cl. 242-117.000.
Glickman, David: *See—*
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Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
Goebel, Franz, to GTE Products Corp. Electrochemical cell. 4,355,085, Cl. 429-101.000.
Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, to BASF Aktiengeselischaft. Preparation of primary aromatic amines from cyclic alcohols and/or ketones. 4,355,180, Cl. 564-398.000.
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Beyer, Horst; and Zerfass, Hans-Reiner, 4,355,068, Cl. 428-290.000.
Golata, John H.: *See—*
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Goldberg, Erwin, to Northwestern University. Antigenic linear peptide compound. 4,354,967, Cl. 260-112.50R.
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Golden, Richard I. Blood pressure cuff. 4,354,503, Cl. 128-686.000.
Goldhammer, Walter M. Modified pressure casting process. 4,354,545, Cl. 164-457.000.
Goldsmith, Riley G.; and Mercier, John A., to Conoco Inc. Temporary mooring of tension leg platforms. 4,354,446, Cl. 114-230.000.
Goldstein, Theodore P.; and Rollmann, Louis D., to Mobil Oil Corporation. Metals beneficiation process. 4,354,870, Cl. 75-108.000.
Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., to Texas Gas Transmission Corporation. Combined radiolytic and thermochemical process for generation of hydrogen. 4,354,906, Cl. 204-157.10H.
Gonzalez-Doerner, Alberto C.: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,355,171, Cl. 556-446.000.
Goodell, Thomas W.; and Clark, Forrest E., to Direct Reduction Corporation, The. Rotary kiln material sampling system. 4,354,392, Cl. 73-863.860.
Gooding, Elwyn R., to University of Michigan, The Regents of the. Headband assembly for protective headgear. 4,354,283, Cl. 2-413.000.
Gooding, Elwyn R., to University of Michigan, The Regents of the. Protective liner for outdoor headgear. 4,354,284, Cl. 2-413.000.
Goodman, Herb L.: *See—*
Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael, 4,354,364, Cl. 68-18.00R.
Gorgas, Donald: *See—*
Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.
Gorman, James T.: *See—*
Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.
Gotoh, Kuniyuki: *See—*
Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.
Gould Advance Limited: *See—*
Farrer, Michael, 4,355,353, Cl. 363-21.000.
Gould Inc.: *See—*
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.
Gould, Robert T. M., to Burroughs Corporation. Apparatus and method for utilizing partially defective memory devices. 4,355,376, Cl. 365-200.000.
Goupy, Marcel; and Roubinet, Pierre, to Regie Nationale des Usines Renault. Bumper attachment apparatus, in particular for automobiles. 4,354,700, Cl. 293-132.000.
Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Preloaded electrical contact terminal. 4,354,729, Cl. 339-258.00R.
Graham, Donald E.: *See—*
Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., 4,355,270, Cl. 318-443.000.
Graham, Garry M.: *See—*
Norton, Richard V.; Fisher, Dennis H.; Graham, Garry M.; and Frank, Peter J., 4,355,194, Cl. 585-14.000.
Grant, Frederic F., to Bell & Howell Company. Reel mounting methods and apparatus. 4,354,644, Cl. 242-68.300.
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, to Chemische Werke Huels Aktiengesellschaft. Powdery coating media and their use. 4,355,058, Cl. 427-386.000.
Grassauer, Willie K.; and Robinson, William M., to Raychem Corporation. Solder delivery system. 4,354,629, Cl. 228-56.000.
Gray, Glenn E. Ready clamp. 4,354,578, Cl. 187-71.000.
Green, David T., to United States Surgical Corporation. Surgical stapler apparatus having pivotally related staple holder and anvil. 4,354,628, Cl. 227-19.000.
Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., to Medical Laboratory Automation, Inc. Kit for calibrating pipettes. 4,354,376, Cl. 73-1.00H.
Greer, James B., to Lone Star Steel Company. High performance tubulars for critical oil country applications and process for their preparation. 4,354,882, Cl. 148-12.00R.
Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, to Sack GmbH. Cold shears and method for cutting billets and bars. 4,354,411, Cl. 83-862.000.
Griesenbrock, Karl-Heinz, to Jungheinrich Unternehmensverwaltung KG. Electrically controlled travel drive control system for steerable vehicles, particularly fork lift trucks. 4,354,568, Cl. 180-197.000.
Griffin, Gerald J. L.; and Emck, Adrian J. Utilization of fibrous waste. 4,354,879, Cl. 106-163.00R.
Griffin, James G.: *See—*
Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., 4,354,345, Cl. 60-39.080.
Grimes, Donald L.; and Haskell, Stanley W., to Polaroid Corporation. Photographic exposure system with computer controlled strobe unit. 4,354,748, Cl. 354-23.00D.
Grimminger, Albert; and Koch, Heinz, to Werner and Pfleiderer. Extruder with a sheet extrusion head and an associated calender. 4,354,814, Cl. 425-186.000.
Grobel, Edward W., to General Signal Corporation. Two pass endothermic generator. 4,355,003, Cl. 422-206.000.
Gross, Thomas A. O., to Jet Spray Corp. Semiconductor switch failure control circuit. 4,355,343, Cl. 361-100.000.
Grow, Joseph A., Jr.: *See—*
Malone, Kenneth B.; and Grow, Joseph A., Jr., 4,354,484, Cl. 126-425.000.
Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering piracetam and choline. 4,355,027, Cl. 424-199.000.
Grumman Aerospace Corporation: *See—*
Duzich, John J., 4,355,280, Cl. 324-207.000.
GTE Automatic Electric Labs Inc.: *See—*
Kosten, Richard B., 4,355,212, Cl. 179-100.00C.
Sabon, Robert J., 4,355,209, Cl. 179-18.0FA.
GTE Products Corporation: *See—*
Cohen, Sheppard; and Barakitis, Nikolaos, 4,355,261, Cl. 315-47.000.
Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., 4,355,265, Cl. 315-290.000.
Goebel, Franz, 4,355,085, Cl. 429-101.000.
Kane, Hugh; and Williams, Bradford J., 4,355,216, Cl. 200-16.00A.
Gudat, Adam J., to Caterpillar Tractor Co. Velocity sensing system. 4,355,364, Cl. 364-565.000.
Guidoux, Loic B. Y., to U.S. Philips Corporation. Carrier detector in a modem provided with an echo canceler. 4,355,406, Cl. 375-82.000.
Gulett, Michael R.: *See—*
Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.
Gulf Oil Corporation: *See—*
Lakshmanan, Pallavoor R., 4,355,125, Cl. 524-401.000.
Gulf & Western Manufacturing Company: *See—*
Kent, Willard L., 4,355,295, Cl. 340-41.00R.
Gulyaev, Jury V.: *See—*
Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,355,290, Cl. 333-195.000.
Gussoni, Giovanni: *See—*
Bianchi, Giuseppe; and Gussoni, Giovanni, 4,354,774, Cl. 405-157.000.
Guthrie, Rachael M. Temperature control device. 4,355,347, Cl. 362-30.000.
Gyobu, Ichiro: *See—*
Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, 4,354,802, Cl. 415-207.000.
Gysling, Henry J.; and Gardner, Sylvia A., to Eastman Kodak Company. Tellurium (IV) compounds and compositions. 4,355,097, Cl. 430-495.000.

H. J. Langen & Sons Ltd.: *See*—
Langen, Marinus J. M., 4,354,590, Cl. 198-425.000.
Haaf, William R.; and Reinhard, Donald L., to General Electric Company. Flame retardant, non-dripping compositions of polyphenylene ether and acrylonitrile-butadiene-styrene. 4,355,126, Cl. 524-411.000.
Haag, Jean-Philippe: *See*—
Levy, Michel; and Haag, Jean-Philippe, 4,355,214, Cl. 179-170.200.
Haba, Hiroaki: *See*—
Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.
Haber, Edgar: *See*—
Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, 4,355,023, Cl. 424-85.000.
Haberkorn, Joseph: *See*—
Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, 4,354,812, Cl. 425-144.000.
Hack, Randolph L.: *See*—
Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.
Hafner-Milac, Natasa: *See*—
Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, 4,354,940, Cl. 210-698.000.
Haga, Ryoichi: *See*—
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,354,936, Cl. 210-602.000.
Hagglund, Hans, to AB Rescon. Device for determining the level of melt in a ladle or the like. 4,354,382, Cl. 73-290.00R.
Haino, Kozo: *See*—
Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, 4,355,090, Cl. 430-204.000.
Hait, James M. Torque driven rotary irrigation system. 4,354,636, Cl. 239-177.000.
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Outboard motor with tilt linkage including pivot link. 4,354,848, Cl. 440-61.000.
Hall, Glenn E.: *See*—
Sagolili, Emmanuel T.; and Hall, Glenn E., 4,354,746, Cl. 354-1.000.
Hall, Robert J., to Wiggins Teape Group Limited. Apparatus for the spark perforation of sheet materials. 4,355,226, Cl. 219-384.000.
Hall, Roger W.; and Lotterer, John F., III. Cold storage assembly. 4,354,359, Cl. 62-299.000.
Hallberg, Rolf O., to Vyrmetoder AB. Process for precipitating heavy metals from wastewater. 4,354,937, Cl. 210-607.000.
Halter, Mark A.: *See*—
Malloy, Thomas P.; Halter, Mark A.; and House, David W., 4,354,904, Cl. 204-59.00R.
Hamilton, Billy H., to Bell Telephone Laboratories, Incorporated. Auxiliary backup regulator control for paralleled converter circuits controlled by a master regulator. 4,355,240, Cl. 307-44.000.
Hamilton, C. Howard, to Rockwell International Corporation. Method for superplastic forming. 4,354,369, Cl. 72-38.000.
Hamilton-Pax, Inc.: *See*—
Laue, Charles E., 4,354,353, Cl. 60-554.000.
Hammer, Hans; and Jacobi, Heinz. Process for the production of boron-containing nickel-aluminum oxide catalysts. 4,354,960, Cl. 252-432.000.
Hammer, Klaus-Dieter: *See*—
Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.
Hammond, Kenneth G.; and Maas, Garren E., to Texaco Inc. Mannich base derivative of hydroxyaryl succinimide and hydrocarbon oil composition containing same. 4,354,950, Cl. 252-51.50A.
Hammond, R. Philip: *See*—
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.
Hampshire, Michael J.; and Williamson, Jonathan H., to Ward & Goldstone Limited. Multiplex information handling system. 4,355,385, Cl. 370-85.000.
Hampson, Edward A. Hand toss-catch game apparatus. 4,354,685, Cl. 273-342.000.
Han, Ching C.: *See*—
Hwang, Yeongming; Han, Ching C.; and Ford, David F., 4,355,316, Cl. 343-840.000.
Haney, Bell Charles: *See*—
Logan, Clifford K., Jr., 4,354,561, Cl. 175-321.000.
Hang, Kenneth W.; and Anderson, Wayne M., to RCA Corporation. Partially devitrified porcelain containing $BaO.2MgO.2SiO_2$ and $2MgO.B_2O_3$ crystalline phases obtained from alkali metal free divalent metal oxide borosilicate glass. 4,355,114, Cl. 501-5.000.
Hang, Kenneth W.; and Anderson, Wayne M., to RCA Corporation. Borosilicate glass frit with MgO and BaO. 4,355,115, Cl. 501-21.000.
Hans, Waldemar, to Robert Bosch GmbH. Electromagnetically actuatable valve. 4,354,640, Cl. 239-585.000.
Hansen, Hans J.; and Reynoso, Gustavo, to Hoffmann-La Roche Inc.; and Ideal Wilson Medical Center, The. Assay for vitamin B_{12}. 4,355,018, Cl. 424-1.000.
Hanson, Marlyn S. Support systems for vehicle mud flaps. 4,354,690, Cl. 280-154.50R.
Hara, Kunio, to Nifco Inc. Apparatus for attachment of sheet carriers to containers. 4,354,334, Cl. 53-48.000.
Harada, Norimichi: *See*—
Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.
Harada, Yusuke: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
Harde, Bo T. S., to AB Volvo. Device in a fuel tank for motor vehicles. 4,354,521, Cl. 137-571.000.
Hardee, Kim C.: *See*—
Sud, Rahul; Hardee, Kim C.; and Heightley, John D., 4,355,377, Cl. 365-203.000.
Hargis, Ivan G.: *See*—
Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
Harms, Wolfgang: *See*—
von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.
Harnisch, Heinz: *See*—
Roszinski, Hilmar; and Harnisch, Heinz, 4,354,983, Cl. 260-990.000.
Harrell, John W.: *See*—
Dennis, Charles L.; and Harrell, John W., 4,355,378, Cl. 367-33.000.
Harrington, Edgar F.: *See*—
Jones, William R.; and Harrington, Edgar F., 4,354,387, Cl. 73-597.000.
Harris, William S., Jr., to Texas Instruments Incorporated. High speed AC/DC coupler. 4,355,237, Cl. 250-551.000.
Harrison, Charles W.: *See*—
Pitman, Herbert J.; and Harrison, Charles W., 4,354,921, Cl. 208-33.000.
Harrison, Derek. Trays for credit card transactions and the like. 4,354,601, Cl. 206-564.000.
Hartel, Gunter, to Bosch & Pierburg System oHG. Method of and device for measuring the amount of liquid fuel in a tank. 4,354,383, Cl. 73-290.00B.
Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, to BASF Aktiengesellschaft. Laminate useful for the production of printing plates and relief plates. 4,355,093, Cl. 430-275.000.
Hartnett, John J.: *See*—
Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.
Haruhara, Tadao, to Orion Machinery Co., Ltd. Infrared ray generator. 4,354,479, Cl. 126-92.0AC.
Harvey Hubbell Incorporated: *See*—
Gartland, Albert J., Jr., 4,355,198, Cl. 174-66.000.
Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., 4,354,705, Cl. 294-86.0CG.
Harvill, William A.: *See*—
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
Hasegawa, Hiroshi; and Maida, Osamu, to Nippon Kogaku K.K. Flash unit having a flash output control device. 4,354,750, Cl. 354-128.000.
Hashimoto, Masashi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
Hashimoto, Norikazu: *See*—
Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.
Hashimoto, Susumu: *See*—
Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, 4,354,726, Cl. 339-230.00R.
Haskell, Stanley W.: *See*—
Grimes, Donald L.; and Haskell, Stanley W., 4,354,748, Cl. 354-23.00D.
Hatch, Marcus R.: *See*—
Abel, Irving R.; and Hatch, Marcus R., 4,354,742, Cl. 350-442.000.
Hathaway, Milton R. Brush cutter. 4,354,341, Cl. 56-503.000.
Hatton, Richard L. Method of making inductance. 4,354,310, Cl. 29-605.000.
Havas, Jeno: *See*—
Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.
Havas, Laszlo: *See*—
Lassalle, Dominique; and Havas, Laszlo, 4,355,143, Cl. 526-119.000.
Haward, Robert N.: *See*—
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.
Hawrylo, Frank Z.; and Olsen, Gregory H., to RCA Corporation. Semiconductor laser diode and method of making the same. 4,355,396, Cl. 372-46.000.
Hayakawa, Masayasu: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, to Ono Pharmaceutical Co., Ltd.; and Kissei Pharmaceutical Co., Ltd. 1-Substituted imidazole derivatives. 4,355,170, Cl. 548-341.000.
Hayden, Howard W., Jr.: *See*—
Gamson, Bernard W.; and Hayden, Howard W., Jr., 4,355,017, Cl. 423-484.000.
Hayes, Cecil: *See*—
Filipowicz, Maciej K.; and Hayes, Cecil, 4,354,427, Cl. 99-307.000.
Hayes, John B., to Kendall Company, The. Joint protector. 4,354,280, Cl. 2-16.000.
Hecht, Hans, to Voest-Alpine Aktiengesellschaft. Measuring arrangement provided at a roller way formed by rotatably mounted rollers as

well as a method of evaluating the measured values. 4,354,315, Cl. 33-182.000.

Heckel, Emil; Seys, Freddy; Baeckelmans, Rene; and Heilmann, Wolfgang, to Degussa Aktiengesellschaft. Process for the production of finely divided oxides of metals. 4,355,015, Cl. 423-336.000.

Heddon, Will. Modular approach fill system. 4,354,678, Cl. 273-51.000.

Heidemann, Wolfgang: *See*—
Eichbaum, Gerhard; and Heidemann, Wolfgang, 4,354,670, Cl. 266-281.000.

Heightley, John D.: *See*—
Sud, Rahul; Hardee, Kim C.; and Heightley, John D., 4,355,377, Cl. 365-203.000.

Heilmann, Wolfgang: *See*—
Heckel, Emil; Seys, Freddy; Baeckelmans, Rene; and Heilmann, Wolfgang, 4,355,015, Cl. 423-336.000.

Heimann GmbH: *See*—
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.

Heinze, Richard E., to Communications Technology Corporation. Polyalphaolefin extended polyurethane systems. 4,355,130, Cl. 524-491.000.

Heismann, Richard A.; and Morris, Richard L., to Outboard Marine Corporation. Two-cycle internal combustion engine including horizontal crankshaft. 4,354,461, Cl. 123-195.0AC.

Heller, Bernardo. D-Phenylalanine treatment. 4,355,044, Cl. 424-319.000.

Hellwig, Friedrich-Wilhelm; and Schrei, Werner, to Siemens Aktiengesellschaft. Method for checking data written into buffered write-read memories in numerically controlled machine tools. 4,355,390, Cl. 371-21.000.

Hemmi, Keiji: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Henderson, Louis L.; and Henderson, Louis L. Fireplace heating unit. 4,354,480, Cl. 126-123.000.

Henderson, Louis L.: *See*—
Henderson, Louis L.; and Henderson, Louis L., 4,354,480, Cl. 126-123.000.

Hendrischk, Wolfgang; and Voigt, Alexander, to Mannesmann Aktiengesellschaft. End-of-paper sensing device. 4,354,766, Cl. 400-708.000.

Hengst, Erwin M. Mounting base construction. 4,354,655, Cl. 248-679.000.

Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, to BASF Aktiengesellschaft. Dye mixtures. 4,354,969, Cl. 260-156.000.

Henrichmann, Ludger: *See*—
Mayer, Siegfried; and Henrichmann, Ludger, 4,354,365, Cl. 70-30.000.

Henry, Joseph D.: *See*—
Willis, Stephen B., Jr.; and Henry, Joseph D., 4,355,181, Cl. 564-477.000.

Hensley, Clifford J. Corrosion control downhole in a borehole. 4,354,553, Cl. 166-244.00C.

Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., to General Electric Co. Insulated terminal assembly. 4,354,725, Cl. 339-214.00R.

Hercules Incorporated: *See*—
Williams, Rafelix A., 4,354,884, Cl. 149-10.000.

Herfurth GmbH: *See*—
Knobbe, Karl-Heinz; and Noldge, Hellmut, 4,355,286, Cl. 330-56.000.

Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, to Siemens Aktiengesellschaft. Method for determining the filter current limit of an electrostatic filter. 4,354,860, Cl. 55-105.000.

Herman Miller, Inc.: *See*—
Propst, Robert L.; and Propst, Paul L., 4,354,611, Cl. 220-335.000.

Herold, Albert J.: *See*—
Yanik, Richard W.; and Herold, Albert J., 4,355,157, Cl. 528-499.000.

Herold, Robert J.; and Bingham, Robert E., to General Tire & Rubber Company, The. Method for treating polypropylene ether and poly-1,2-butylene ether polyols. 4,355,188, Cl. 568-620.000.

Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Brushless direct current motor and control therefor. 4,355,255, Cl. 310-254.000.

Herrold, Lear C.: *See*—
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,354,830, Cl. 432-258.000.

Herschinger, Heinz: *See*—
Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.

Hesston Corporation: *See*—
Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.

Hestermann, Gerhard: *See*—
Vohringer, Gerhard F.; and Hestermann, Gerhard, 4,354,451, Cl. 118-326.000.

Heurlin, Gustav S.: *See*—
Kristoffersson, Ingmar; and Heurlin, Gustav S., 4,354,551, Cl. 165-166.000.

Hewlett-Packard Company: *See*—
Younge, Robert G., 4,355,279, Cl. 324-161.000.

Heyman Manufacturing Company: *See*—
Brown, Donald C., 4,354,727, Cl. 339-256.00R.

Heymer, Gero: *See*—
Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.

Hidding, Walter E. Snap-on tamperproof bottle cap. 4,354,609, Cl. 215-252.000.

Higgins, Robert S., to Otis Engineering Corporation. Automatic reset pneumatic timer. 4,354,524, Cl. 137-624.140.

Higgins, Robert S.: *See*—
McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.

Hiji, Toshiharu: *See*—
Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.

Hilgers, Franz, to Leo Gottwald KG. Crane for heavy lifting with an erection column for the main jib. 4,354,607, Cl. 212-175.000.

Hill, Keith W.: *See*—
Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., 4,354,705, Cl. 294-86.0CG.

Hilliard, John C.: *See*—
Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.

Hing, Peter; and Kay, Ronald, to Thorn Emi Limited. Cermet materials. 4,354,964, Cl. 252-518.000.

Hingorani, Narain G., to Electric Power Research Institute, Inc. Means for damping subsynchronous oscillations in an AC power system including overload protection. 4,355,241, Cl. 307-102.000.

Hinni, Bernhard: *See*—
Ludi, Roger; and Hinni, Bernhard, 4,355,292, Cl. 335-145.000.

Hiraga, Yoichi: *See*—
Murakami, Tsugio; Igawa, Kazushige; and Hiraga, Yoichi, 4,355,014, Cl. 423-265.000.

Hirayama, Hiroshi: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Hirose, Kiyonobu; and Izumiyama, Taizo, to Hitachi Construction Machinery Co., Ltd. Front loading hydraulic excavator. 4,354,797, Cl. 414-700.000.

Hirschfeld, Tomas; and Margoshes, Marvin, to Block Engineering, Inc. Digitally controlled electro-optical imaging system. 4,355,336, Cl. 358-217.000.

Hirst, Roy T.: *See*—
Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.

Hitachi Chemical Co., Ltd.: *See*—
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Hirose, Kiyonobu; and Izumiyama, Taizo, 4,354,797, Cl. 414-700.000.

Hitachi Koki Company, Limited: *See*—
Kubo, Kazuyuki; and Katagiri, Shigenobu, 4,355,393, Cl. 371-51.000.

Hitachi, Ltd.: *See*—
Hosokawa, Takanori; Maki, Hideo; and Shinbo, Katsutoshi, 4,355,002, Cl. 376-419.000.
Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
Inoue, Shigeki, 4,355,414, Cl. 455-184.000.
Kuwabara, Takao, 4,354,800, Cl. 415-1.000.
Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, 4,354,802, Cl. 415-207.000.
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.
Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.
Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, 4,355,232, Cl. 250-310.000.

Hitachi Metals, Ltd.: *See*—
Inoue, Takeo; and Okada, Kuniaki, 4,354,372, Cl. 72-177.000.

Hix, Daniel H.; and Closser, Daniel D., to United States Gypsum Company. Method for making a decorated, water-resistant, rigid panel and the product made thereby: transfer dye process onto rigid panel. 4,354,851, Cl. 8-471.000.

Hiyama, Norio: *See*—
Kasuga, Masao; Hiyama, Norio; and Tsuchikane, Yoshiyuki, 4,355,304, Cl. 340-347.0DD.

Hiyama, Takashi, to Nippon Electric Co., Ltd. Radio signal receiving system having means for selectively combining signals from a plurality of receiving sections. 4,355,419, Cl. 455-303.000.

Hochmuth, William R.; and Shelton, William S., to ACF Industries, Incorporated. Lubricant fitting for a valve. 4,354,523, Cl. 137-614.180.

Hodgson, Robert F., to Commercial Shearing, Inc. Control valves. 4,354,526, Cl. 137-625.480.

Hoechst Aktiengesellschaft: *See*—
Baltes, Herbert; and Leupold, Ernst I., 4,355,187, Cl. 568-471.000.
Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.
Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.
Roszinski, Hilmar; and Harnisch, Heinz, 4,354,983, Cl. 260-990.000.
Stemmler, Hermann; and Knittel, Volker, 4,355,074, Cl. 428-350.000.
Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, 4,355,189, Cl. 568-637.000.
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Hoechst-Roussel Pharmaceuticals: *See—*
Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., 4,355,037, Cl. 424-267.000.
Hoefkens, Daniel S. G.: *See—*
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.
Hoff, William B., III: *See—*
Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, 4,354,297, Cl. 17-54.000.
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Hoffmann, Gerhard: *See—*
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Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,354,973, Cl. 260-245.700.
Hansen, Hans J.; and Reynoso, Gustavo, 4,355,018, Cl. 424-1.000.
Hoffmann, Werner: *See—*
Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, 4,355,180, Cl. 564-398.000.
Hofstetter, Robert W. Conveyor system with cooling means. 4,354,357, Cl. 62-216.000.
Hogin, Philip E. Condom having a retention strap. 4,354,494, Cl. 128-294.000.
Hokari, Shigenori: *See—*
Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.
Hoke, John L.; and Sudia, Theodore W., to United States of America, Interior. Catalytic coating to directly generate heat upon the surface of a heat dome. 4,354,352, Cl. 60-517.000.
Holan, George; and O'Keefe, David F., to Commonwealth Scientific and Industrial Research Organization. Insecticidal esters. 4,355,042, Cl. 424-285.000.
Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael. Dry-cleaning system. 4,354,364, Cl. 68-18.00R.
Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., to Rolls-Royce Limited. Gas turbine engines. 4,354,687, Cl. 277-26.000.
Holland, Robert L., Jr.: *See—*
Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.
Holloway, Thomas C.: *See—*
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.
Holsinger, Ronald F., to New England Nuclear Corporation. Variable strength beam line multipole permanent magnets and methods for their use. 4,355,236, Cl. 250-396.0ML.
Holzapfel, Walter: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.
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Sato, Toshihiko, 4,354,469, Cl. 123-460.000.
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Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.
Honda, Katsuhisa: *See—*
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Honeywell Inc.: *See—*
Abel, Irving R.; and Hatch, Marcus R., 4,354,742, Cl. 350-442.000.
Acker, William F., 4,355,284, Cl. 328-155.000.
Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.
Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., 4,355,086, Cl. 429-105.000.
Honeywell Information Systems Inc.: *See—*
Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., 4,354,311, Cl. 29-840.000.
Honigmann, Bertold: *See—*
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Honkala, Risto J.: *See—*
Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.
Honma, Hideaki: *See—*
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Hooker Chemicals & Plastics Corp.: *See—*
Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., 4,354,915, Cl. 204-242.000.
Hoover, Merle V., to RCA Corporation. Bridge amplifiers employing complementary field-effect transistors. 4,355,287, Cl. 330-264.000.
Horey, Leonard I., to Singer Company, The. Method for storing sewing machine stitch pattern data in a byte organized memory. 4,354,442, Cl. 112-158.00E.
Horiuchi, George H., to Sperry Corporation. Bale tension apparatus. 4,354,430, Cl. 100-192.000.
Hoshour, John R.: *See—*
Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.
Hoskins, Phillip M.: *See—*
Kasuba, John A.; Fee, Graham M.; and Hoskins, Phillip M., 4,354,634, Cl. 238-338.000.
Hoskinson, Ronald M.; Cox, Ronald I.; and Wong, Michael S. F., to Commonwealth Scientific and Industrial Research Organization. Phosphonothioate immunogens. 4,354,977, Cl. 260-397.400.
Hosoda, Seiichi, to Olympus Optical Co., Ltd. Endoscopic photographing apparatus. 4,354,749, Cl. 354-33.000.
Hosokawa, Motoyuki: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.
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Hotta, Masahiro: *See—*
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House, David W.: *See—*
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Hoyer, Gerd; and Pietschmann, Helmut, to Sybron Corporation. Foot controller for dental instruments or the like. 4,354,838, Cl. 433-101.000.
Hruska, Louis W.: *See—*
Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
Huber, Wilhelm: *See—*
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.
Hubert, Bernard, to Societe Nationale Industrielle Aerospatiale. Satellite antenna orientation control method and sensor configuration applying said method. 4,355,313, Cl. 343-725.000.
Hudek, Amanda, Kurt Hudek, Gerd Hudek, heirs: *See—*
Weigert, Kurt; and Hudek, Karl, deceased, 4,354,498, Cl. 128-419.00R.
Hudek, Karl, deceased: *See—*
Weigert, Kurt; and Hudek, Karl, deceased, 4,354,498, Cl. 128-419.00R.
Hudson, George A., deceased: *See—*
Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.
Huff, Warren P. Long fishing line apparatus with movable multiple skate racks, a two position main hauler and a slack taker, and a water agitated automatic baiter. 4,354,323, Cl. 43-4.000.
Huggins, Edgar M.; and Brandon, Thomas M. Mechanical pruning device. 4,354,340, Cl. 56-27.500.
Hughes Aircraft Company: *See—*
Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.
Hughey, Robert M.; Fairchild, James J.; and Brown, James H., to Synergistic Controls, Inc. Radio frequency controlled light system. 4,355,309, Cl. 340-825.530.
Huguenin, Freddy; and Wattenhofer, Jean-Pierre, to Ebauches, S.A. Electronic timepiece with auxiliary digital display. 4,355,380, Cl. 368-71.000.
Hulin, Jean-Pierre: *See—*
Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.
Hultgren, Lennart C. Extendable bowsprit pulpit for a fishing boat. 4,354,447, Cl. 114-255.000.
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., to Kabigen AB. Bacteriolytic proteins. 4,355,104, Cl. 435-70.000.
Hummer, Roland; Reinisch, Joseph; and Thury, Wolfgang A., to Metals & Alloys Company Limited. Process for purging aluminum and aluminum alloy melts of small quantities of alkali and alkaline earth metals. 4,354,869, Cl. 75-63.000.
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., to Texas Instruments Incorporated. Formation of submicron substrate element. 4,354,896, Cl. 156-643.000.
Huntington Alloys, Inc.: *See—*
Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., 4,355,224, Cl. 219-137.0WM.
Hupfer, Leopold: *See—*
Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, 4,355,180, Cl. 564-398.000.
Hurst, George P. Connector for wire rope. 4,354,799, Cl. 414-756.000.
Hurst, Kenneth. Mounting block for tufting machine gauge parts. 4,354,441, Cl. 112-79.00R.
Hurst, Louis S.: *See—*
Antrim, Richard L.; and Hurst, Louis S., 4,355,117, Cl. 521-28.000.
Hutchison, Ralph M.; Martin, Phillip C.; and Willingham, Francis Y., to Manville Service Corporation. Mineral article such as thermal insulation containing visual identification means. 4,354,878, Cl. 106-120.000.

Huxley, Edward E.: *See*—
Nash, Martin E.; and Huxley, Edward E., 4,355,183, Cl. 568-19.000.
Hwang, Yeongming; Han, Ching C.; and Ford, David F., to Ford Aerospace & Communications Corp. Offset J-hook reflector antenna. 4,355,316, Cl. 343-840.000.
Hydro-Pac, Inc.: *See*—
Taylor, Dan G.; and Robertson, Walter W., 4,354,664, Cl. 251-282.000.
Hydrocarbon Research, Inc.: *See*—
Kydd, Paul H., 4,354,852, Cl. 23-230.00A.
Ichiyanagi, Takashi: *See*—
Imanishi, Kiyokazu; and Ichiyanagi, Takashi, 4,354,686, Cl. 277-3.000.
Ickinger, William J. Behavioral and psychological test instrument. 4,354,844, Cl. 434-237.000.
Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Machine tool having replaceable gang heads. 4,354,306, Cl. 29-568.000.
Ideal Wilson Medical Center, The: *See*—
Hansen, Hans J.; and Reynoso, Gustavo, 4,355,018, Cl. 424-1.000.
Iga, Akira: *See*—
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Iizuka, Haruhiko: *See*—
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Ikeda, Hiroshi: *See*—
Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.
Ikemoto, Isao: *See*—
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Otani, Junji; and Ikenoya, Yasuo, 4,354,463, Cl. 123-308.000.
Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, to Nippon Electric Co., Ltd. Radio transmitter/receiver for digital and analog communications system. 4,355,401, Cl. 375-5.000.
Ilco Unican Corp.: *See*—
Bougiouris, Evangelos, 4,354,780, Cl. 409-122.000.
Ilg, Rudolf, to Zahnradfabrik Friedrichshafen, AG. Vane pump having sleeve bearing and rotor retaining construction. 4,354,808, Cl. 418-259.000.
Iliopulos, Miltiadis I.; and Baumann, Gert F., to Mobay Chemical Corporation. Process for the production of inorganic-organic compositions. 4,355,118, Cl. 521-108.000.
Illger, Hans-Walter: *See*—
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Ima, Seiichiro: *See*—
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Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, to Hitachi, Ltd. Signal processing circuit for use in solid-state camera. 4,355,335, Cl. 358-213.000.
Imanishi, Kiyokazu; and Ichiyanagi, Takashi, to Matsushita Electric Industrial Co., Ltd. Contact-free sealing member. 4,354,686, Cl. 277-3.000.
Imazeki, Ryoji; and Yamazaki, Etsuo, to Fujitsu Fanuc Limited. Tracer control system. 4,355,362, Cl. 364-474.000.
IMC Magnetics Corp.: *See*—
Manson, Harry G., 4,355,248, Cl. 310-42.000.
Imhof, Jorg. Covering material. 4,355,064, Cl. 428-178.000.
Imoto, Tadashi: *See*—
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Gilman, Robert W., 4,354,817, Cl. 425-331.000.
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Sud, Rahul; Hardee, Kim C.; and Heightley, John D., 4,355,377, Cl. 365-203.000.
Innocenti Santeustacchio S.p.A.: *See*—
Ramusino, Francesco C., 4,354,404, Cl. 82-2.00D.
Inoue, Hideo, to Shima Idea Center Co., Ltd. Means for controlling the movement of yarn carriers along with a carriage in flat knitting machines. 4,354,363, Cl. 66-128.000.
Inoue-Japax Research Inc.: *See*—
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Inoue, Kiyoshi; and Shibuya, Iwao, to Inoue-Japax Research Inc. Electroerosion method and system for taper cutting with travelling wire electrode. 4,355,223, Cl. 219-69.00M.
Inoue, Shigeki, to Hitachi, Ltd. Automatic gain control system. 4,355,414, Cl. 455-184.000.
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Institut National de la Sante et de la Recherche Medicale, INSERM: *See*—
Quash, Gerard, 4,355,102, Cl. 435-5.000.
Institut Textile Boulogne-Sur de France: *See*—
Neveu, Jean-Louis, 4,355,067, Cl. 428-253.000.
International Business Machines Corporation: *See*—
Buchanan, James C.; and Rutkowski, Edward V., Jr., 4,354,765, Cl. 400-7.000.
Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,355,371, Cl. 364-900.000.
Ellis, Theron L., 4,354,895, Cl. 156-631.000.
Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.
King, Francis K.; and Wanek, Donald J., 4,355,339, Cl. 360-105.000.
Mitchell, Joan L., 4,355,306, Cl. 340-347.0DD.
International Computers Limited: *See*—
Scarrott, Gordon G., 4,355,408, Cl. 375-110.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.
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International Harvester Co.: *See*—
Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., 4,354,931, Cl. 210-136.000.
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,355,120, Cl. 521-189.000.
Swanson, William C., 4,354,688, Cl. 280-43.230.
International Paper Company: *See*—
Smeltzer, Richard H.; and Cello, Linda M., 4,354,327, Cl. 47-58.000.
International Standard Electric Corporation: *See*—
Bergersen, Hans A., 4,354,886, Cl. 156-50.000.
Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
Paschen, Hans-Joachim, 4,355,422, Cl. 455-343.000.
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.
Schmidt, Peter; and Muhlberger, Emil, 4,354,703, Cl. 294-64.00R.
Weiss, Eberhard, 4,355,259, Cl. 313-337.000.
International Telephone and Telegraph Corporation: *See*—
Glavas, Xenophon; G.; and Thompson, Robert E., 4,354,645, Cl. 242-117.000.
Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.
Interon, Inc.: *See*—
Rabussay, Dietmar P., 4,355,022, Cl. 424-50.000.
Interpace Corporation: *See*—
Wheeler, Edward S.; and Campagna, Anthony J., 4,355,200, Cl. 174-140.00S.
Inubushi, Akiyoshi: *See*—
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IPCO Corporation: *See*—
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Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, to Ciba-Geigy Corporation. Nickel complex pigments of azines. 4,355,159, Cl. 542-417.000.
Isaacs, Harold. Merchandise stocking system and method, and equipment used therewith. 4,354,604, Cl. 211-17.000.
Ishibashi, Takeshi: *See*—
Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, 4,354,306, Cl. 29-568.000.
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, to Agency of Industrial Science and Technology, The. Anaerobic digestion process. 4,354,936, Cl. 210-602.000.
Ishida, Tokuji: *See*—
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.
Ishigaki, Isao: *See*—
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Ishihara, Hiroyuki, to Nippon Electric Co., Ltd. Frequency converter capable of eliminating local power leak. 4,355,420, Cl. 455-317.000.
Ishihara, Toshinobu: *See*—
Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.
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Ishikawa, Hidetsugu: *See*—
Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, 4,355,319, Cl. 346-76.0PH.

Ishikura, Tomoyuki: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.
Isley, Ralph E., to SOHIO. Physical property improvement in nitrile resins by use of certain processing aids and fillers. 4,355,127, Cl. 524-423.000.
Isogai, Hideaki, to Fujitsu Limited. Electronic circuit. 4,355,245, Cl. 307-455.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for the preparation of alkyl carboxylate. 4,355,173, Cl. 560-103.000.
Israel, Renato G.; Lavoisard, Jean-Louis; and Marchand, Jean-Claude, deceased (by Marchand, Colette A. M., legal representative), to Societe Anonyme de Telecommunications. Ringing control device. 4,355,206, Cl. 179-18.0HB.
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, to Sumitomo Electric Industries, Ltd. Optical character reading system. 4,355,301, Cl. 340-146.30D.
Isuzu Motors Ltd.: *See*—
Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, 4,354,465, Cl. 123-339.000.
Ito, Kentaro: *See*—
Tanaka, Norio; and Ito, Kentaro, 4,354,570, Cl. 180-219.000.
Ito, Toshihiko: *See*—
Yamamoto, Shinichi; and Ito, Toshihiko, 4,354,820, Cl. 425-461.000.
Itoh, Masatoshi: *See*—
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.
ITT Industries, Inc.: *See*—
Belart, Juan, 4,354,714, Cl. 303-114.000.
Birkenbach, Alfred; and Franke, Helmut, 4,354,581, Cl. 188-71.900.
Burgdorf, Jochen, 4,354,716, Cl. 303-119.000.
Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.
ITW de France: *See*—
Morel, Henri, 4,354,722, Cl. 339-95.00D.
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Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, 4,354,465, Cl. 123-339.000.
Iwane, Masahiko: *See*—
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,355,389, Cl. 371-18.000.
Iwasa, Hitoo: *See*—
Koike, Susumu; and Iwasa, Hitoo, 4,354,453, Cl. 118-426.000.
Iwasawa, Teruo; and Tojiki, Hitomi, to Mobil Oil Corporation. Motor control apparatus. 4,355,268, Cl. 318-314.000.
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Iwata, Kohki: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
Iya, Sridhar K., to Union Carbide Corporation. Consolidation of high purity silicon powder. 4,354,987, Cl. 264-13.000.
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, to Minolta Camera Kabushiki Kaisha. Exposure system for a camera. 4,354,751, Cl. 354-139.000.
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Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
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Jacobi, Heinz: *See*—
Hammer, Hans; and Jacobi, Heinz, 4,354,960, Cl. 252-432.000.
Jacobson, Allan J.: *See*—
Johnson, Jack W.; and Jacobson, Allan J., 4,355,161, Cl. 544-181.000.
Johnson, Jack W.; and Jacobson, Allan J., 4,355,162, Cl. 544-181.000.
Jacobson, James E., Jr.: *See*—
Davis, Walter L.; and Jacobson, James E., Jr., 4,355,277, Cl. 323-351.000.
Jacoby, Hans-Dieter, to Ernst Leitz Wetzlar GmbH. Method and apparatus for automatic evaluation of indentations in hardness testing of materials. 4,354,761, Cl. 356-378.000.
Jaffe, Wolfgang: *See*—
Herr, John A.; and Jaffe, Wolfgang, 4,355,255, Cl. 310-254.000.
Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., to Standard Oil Company (Indiana). Apparatus and method for drilling into the sidewall of a drill hole. 4,354,558, Cl. 175-45.000.
Jain, Atul: *See*—
United States of America, National Aeronautics and Space Administration; and Jain, Atul, 4,355,311, Cl. 343-5.0CM.
Jalas, Leon C. Pneumatic line clean out device. 4,354,775, Cl. 406-3.000.
James River Corporation: *See*—
Kinsley, Homan B., Jr., 4,355,081, Cl. 428-526.000.
Janser, Gerd: *See*—
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January, James R., to Dow Corning Corporation. Tintable abrasion resistant coatings. 4,355,135, Cl. 524-767.000.
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Machi, Suco; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.
Jarmy, Howard I., to Singer Company, The. Circuit board connector indexing key. 4,354,724, Cl. 339-186.00R.
Jaskolski, Stanley V.: *See*—
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,355,322, Cl. 357-38.000.
Jasny, Jan: *See*—
Schaefer, Fritz P.; and Jasny, Jan, 4,355,394, Cl. 372-16.000.
Jefferson, Robert T. Screw holder system. 4,354,540, Cl. 145-46.000.
Jervis B. Webb Company: *See*—
Dehne, Clarence A., 4,354,434, Cl. 104-103.000.
Jessup, Gregory M., to Bendix Corporation, The. Low or flat tire warning system. 4,355,298, Cl. 340-58.000.
Jet Spray Corp.: *See*—
Gross, Thomas A. O., 4,355,343, Cl. 361-100.000.
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Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,355,031, Cl. 424-250.000.
Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, to Hoechst Aktiengesellschaft. Process for removing phosphorus in vapor form and phosphanes from gas mixtures. 4,355,010, Cl. 423-210.000.
Johnson, Daniel E., to Metal Improvement Company, Inc. Method of prestressing the working surfaces of pressure chambers or cylinders. 4,354,371, Cl. 72-53.000.
Johnson, Gary R., to Tri-State Oil Tool Industries, Inc. Enlarged borehole drilling method and apparatus. 4,354,559, Cl. 175-71.000.
Johnson, Gary R., to Tri-State Oil Tool Industries, Inc. Apparatus for drilling enlarged boreholes. 4,354,560, Cl. 175-267.000.
Johnson, Jack W.; and Jacobson, Allan J., to Exxon Research and Engineering Co. Molybdenum trioxide layered compounds. 4,355,161, Cl. 544-181.000.
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Johnson & Johnson: *See*—
Oczkowski, Boguslaw; and Schiff, Norman, 4,354,487, Cl. 128-156.000.
Johnson, Thomas, to Skuttle Mfg. Co. Water wash humidifier assembly. 4,354,985, Cl. 261-100.000.
Johnson, Tod; Tarshis, Andrew; and Goldberg, George, to NPD Research Inc. Market survey data collection method. 4,355,372, Cl. 364-900.000.
Johnston, Barry W. Closed loop solar collector system with dual reservoirs and fluid bypass. 4,354,483, Cl. 126-419.000.
Jones, Alan R.: *See*—
Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.
Jones, Edward A. Pick-up camper locating and holddown assembly. 4,354,707, Cl. 296-167.000.
Jones, Howard: *See*—
Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.
Jones & Laughlin Steel Incorporated: *See*—
Ernst, Donald M., 4,354,668, Cl. 266-45.000.
Jones, Norman W.: *See*—
Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.
Jones, Stanley W.: *See*—
Franz, James H., Jr.; and Jones, Stanley W., 4,355,267, Cl. 318-89.000.
Jones, William R.; and Harrington, Edgar F., to National Identification Bureau Inc. Apparatus identification system. 4,354,387, Cl. 73-597.000.
Jonsson, Ann-Marie: *See*—
Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
Jonsson, Asa: *See*—
Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
Jonsson, Jane: *See*—
Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
Jonsson, Lennart C. B., to Jonsson, Ann-Marie; Jonsson, Jane; and Jonsson, Asa. Service line terminal box system, especially for ships moored to quays. 4,355,197, Cl. 174-37.000.
Joseph, Peter M.: *See*—
Wilson, Stephen S.; and Joseph, Peter M., 4,355,230, Cl. 250-252.100.
Joslin, Bradley D.: *See*—
Sundheimer, Craig S.; and Joslin, Bradley D., 4,354,514, Cl. 134-152.000.
Judd, Tyler W.: *See*—
Toth, James M.; and Judd, Tyler W., 4,355,281, Cl. 324-232.000.
Jungheinrich Unternehmensverwaltung KG: *See*—
Griesenbrock, Karl-Heinz, 4,354,568, Cl. 180-197.000.
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Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Deguchi, Hideaki, 4,354,374, Cl. 72-389.000.
Kabushiki Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Hajime; and Arakawa, Hiroshi, 4,354,533, Cl. 139-435.000.
Kaczur, Jerry J.; Tyler, James C., Jr.; and Simmons, John J., to Olin Corporation. Stabilization of mercury in mercury-containing materials. 4,354,942, Cl. 210-712.000.
Kafka, Charles F.; and Kafka, Robert S., to Meacham Marine Products, Inc. Retractable lift ring. 4,354,445, Cl. 114-218.000.
Kafka, Robert S.: *See*—
Kafka, Charles F.; and Kafka, Robert S., 4,354,445, Cl. 114-218.000.
Kaganowicz, Grzegorz; and Robinson, John W., to RCA Corporation. Method of preparing an abrasive coated substrate. 4,355,052, Cl. 427-39.000.
Kahn, Alan R., to Medtronic, Inc. Cardiac depolarization detection apparatus. 4,354,497, Cl. 128-419.00D.
Kain, Arthur F. Suspension idler mold apparatus. 4,354,656, Cl. 249-78.000.
Kaiser, Emil T. Synthesis of steroids. 4,354,972, Cl. 260-239.55R.
Kaiser, Klaus: *See*—
Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.
Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Command speed generator system for elevator car. 4,354,576, Cl. 187-29.00R.
Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, to Nippon Soda Company Limited. Synthesis of α, β-unsaturated-ketones. 4,355,184, Cl. 568-31.000.
Kakugo, Masahiro: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.
Kalt, Charles G. Particle collector and method of manufacturing same. 4,354,861, Cl. 55-130.000.
Kamalich, Anthony: *See*—
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Kaman Aerospace Corporation: *See*—
Mayerjak, Robert J., 4,354,704, Cl. 294-74.000.
Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Method of preparing a catalyst for synthesizing unsaturated esters. 4,354,961, Cl. 252-439.000.
Kamyr, Inc.: *See*—
Richter, Johan C. F. C.; and Ramstad, Jens, 4,354,777, Cl. 406-63.000.
Kanada, Eiji: *See*—
Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, 4,355,090, Cl. 430-204.000.
Kanayama, Akikatsu: *See*—
Nakamura, Mamoru; and Kanayama, Akikatsu, 4,355,146, Cl. 526-199.000.
Kandybowski, Steven J.: *See*—
Bright, Edward J.; and Kandybowski, Steven J., 4,354,718, Cl. 339-17.0CF.
Kane, Hugh; and Williams, Bradford J., to GTE Products Corporation. Electric switch. 4,355,216, Cl. 200-16.00A.
Kanegae, Hidetoshi; and Asano, Masaharu, to Nissan Motor Company, Limited. Control system for internal combustion engines. 4,355,359, Cl. 364-431.040.
Kaneko, Katsumi: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.
Kaneko, Makoto: *See*—
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Kanetsu Kogyo Kabushiki Kaisha: *See*—
Nakajima, Takato, 4,354,930, Cl. 209-221.000.
Kango Electric Hammers Limited: *See*—
Vaughan, Christopher A., 4,354,779, Cl. 408-241.00S.
Kanki, Kazuhiko: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.
Kansai Paint Co., Ltd.: *See*—
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Oeda, Yoshitaka, 4,355,070, Cl. 428-323.000.
Kao, Ming L.: *See*—
Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.
Kaplan, Leonard A., to RCA Corporation. Power protection circuit for transistors. 4,355,341, Cl. 361-79.000.
Karl, Otto: *See*—
Binz, Reiner; and Karl, Otto, 4,355,386, Cl. 370-100.000.
Karl Schmidt GmbH: *See*—
Steidle, Werner, 4,354,426, Cl. 92-235.000.
Karl, Walter, to Utilux Pty. Limited. Feed mechanisms. 4,354,790, Cl. 414-222.000.
Karlberg, John E. Supports for coaxial conduits. 4,354,657, Cl. 249-83.000.
Karpati nee Adam, Eva: *See*—
Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, 4,355,178, Cl. 564-44.000.
Kasuba, John A.; Fee, Graham M.; and Hoskins, Phillip M., to True Temper Railway Appliances, Inc. Rail overturn prevention device. 4,354,634, Cl. 238-338.000.
Kasuga, Masao; Hiyama, Norio; and Tsuchikane, Yoshiyuki. Digital compandor. 4,355,304, Cl. 340-347.0DD.
Kasui, Toshikatsu: *See*—
Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.
Katagiri, Shigenobu: *See*—
Kubo, Kazuyuki; and Katagiri, Shigenobu, 4,355,393, Cl. 371-51.000.
Katayama, Hitoshi, to Shimano Industrial Company Limited. Handle bar fixing device for a bicycle. 4,354,399, Cl. 74-551.100.
Katayama, Susumu: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
Kato Hatsujo Kabushiki Kaisha: *See*—
Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.
Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, to Nissan Motor Company, Limited. Battery terminal connector with an uneven interior surface. 4,354,726, Cl. 339-230.00R.
Katsuura, Kiyoshi: *See*—
Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, 4,355,184, Cl. 568-31.000.
Kaufman, Martin H., to United States of America, Navy. Nitrile elastomer surfaces receptive for bonding by epoxy adhesives and method therefor. 4,355,078, Cl. 428-414.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,354,412, Cl. 84-1.010.
Deutsch, Ralph; and Deutsch, Leslie J., 4,354,414, Cl. 84-1.240.
Kawakami, Yasushi, to Nissan Motor Company, Limited. Preset station selecting device in a radio receiver. 4,355,412, Cl. 455-175.000.
Kawakita, Kenji: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
Kawamura, Masanori: *See*—
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Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, to Onoda Cement Company, Ltd. Demolition agent, its preparation and its use. 4,354,877, Cl. 106-90.000.
Kawasaki, Tetsuji: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, to Kabushiki Kaisha Daini Seikosha. Thickness shear type piezoelectric vibrator with integral mounting. 4,355,257, Cl. 310-361.000.
Kawata, Shoji: *See*—
Oyama, Tadashi; and Kawata, Shoji, 4,354,525, Cl. 137-625.500.
Kawauchi, Satsuki: *See*—
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Kay, Ronald: *See*—
Hing, Peter; and Kay, Ronald, 4,354,964, Cl. 252-518.000.
Kayser, John P.; and Pinkert, John R., to Airco, Inc. Thoracic drainage unit. 4,354,493, Cl. 128-276.000.
Kearns, Thomas B.: *See*—
Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., 4,354,825, Cl. 432-14.000.
Keenan, Charles A.: *See*—
Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.
Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., to Nalco Chemical Company. Metal oxide oil slurries. 4,354,872, Cl. 106-14.270.
Keller, George E., II; and Kuo, Chia-Huei A., to Union Carbide Corporation. Enhanced gas separation by selective adsorption. 4,354,859, Cl. 55-25.000.
Keller, Peter: *See*—
Wippermann, Gerhard; and Keller, Peter, 4,354,619, Cl. 221-263.000.
Keller, William E.: *See*—
Plummer, Harvey R.; and Keller, William E., 4,354,305, Cl. 29-568.000.
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., to Motorola, Inc. Auto-zeroing operational amplifier circuit. 4,355,285, Cl. 330-9.000.
Kelsey-Hayes Co.: *See*—
Main, John A., 4,354,711, Cl. 301-9.0CN.
Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., to Standard Oil Company (Indiana). Interface apparatus for coupling a minicomputer to a microcomputer for the transfer of data between them and method for using same. 4,355,354, Cl. 364-200.000.
Kendall Company, The: *See*—
Hayes, John B., 4,354,280, Cl. 2-16.000.
Newman, Nicholas S., 4,355,066, Cl. 428-198.000.
Kenji, Okamura: *See*—
Sone, Kohki; and Kenji, Okamura, 4,354,468, Cl. 123-440.000.
Kennecott Corporation: *See*—
Maczuga, Jacob W.; and Wilhelm, Daniel C., 4,354,986, Cl. 264-8.000.
Kenner, Mary B. Bathroom tissue holder. 4,354,643, Cl. 242-55.200.
Kent, Willard L., to Gulf & Western Manufacturing Company. Method and device for connecting terminals of a traffic control unit. 4,355,295, Cl. 340-41.00R.

Kenwell, Rudolf F. Direct current motor having outer rotor and inner stator. 4,355,249, Cl. 310-49.00R.
Kepplinger, Werner: *See—*
Kruger, Gerhard; and Kepplinger, Werner, 4,354,826, Cl. 432-18.000.
Kernforschungsanlage Julich GmbH: *See—*
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Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See—*
Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, 4,354,954, Cl. 252-629.000.
Kerotest Manufacturing Corp.: *See—*
McHale, Joseph P., 4,354,666, Cl. 251-335.00A.
Kersting, Emil F.: *See—*
Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.
Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, to United States of America, Environmental Protection Agency. Multiple stage catalytic combustion process and system. 4,354,821, Cl. 431-7.000.
Kessler, Milton; and Ullman, Myron E., Jr., to Kessler Products Co., Inc. Reusable container closure cap. 4,354,610, Cl. 215-253.000.
Kessler Products Co., Inc.: *See—*
Kessler, Milton; and Ullman, Myron E., Jr., 4,354,610, Cl. 215-253.000.
Ullman, Myron E., Jr., 4,354,370, Cl. 72-42.000.
Keyes, Gary S.: *See—*
Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.
Khungar, Sohan L.; and Shah, Suresh R., to B. F. Goodrich Company, The. Method for homogenizing monomer mixes for vinyl latex production. 4,355,142, Cl. 526-88.000.
Kidde, Inc. (Presto Lock Company Division): *See—*
Bako, Lazlo, 4,354,366, Cl. 70-312.000.
Kieber, Lothar, to Deutsche Calypsolgesellschaft mbH & Co. Oil suction apparatus. 4,354,574, Cl. 184-1.500.
Kilichowski, Kurt B.: *See—*
Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,355,094, Cl. 430-286.000.
Kilmer, Lauren G.: *See—*
Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.
Kimura, Takao: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
King, Francis K.; and Wanek, Donald J., to International Business Machines Corporation. Transducer carriage assembly. 4,355,339, Cl. 360-105.000.
Kingport, Ltd.: *See—*
Gerch, Edward L., 4,354,542, Cl. 150-34.000.
Kinsley, Homan B., Jr., to James River Corporation. Curing of resin impregnated cellulosics with continuously superheated steam. 4,355,081, Cl. 428-526.000.
Kiriyama, Tsutomu: *See—*
Norota, Susumu; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,355,075, Cl. 428-369.000.
Kishimoto, Shoji: *See—*
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Kissei Pharmaceutical Co., Ltd.: *See—*
Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.
Kissel, Roland R., to Midland-Ross Corporation. Process and device for improving heat exchange in furnaces heated by radiant heaters. 4,354,827, Cl. 432-21.000.
Kitamoto, Tatsuji: *See—*
Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Co., Ltd. Peptides, process for preparation thereof and use thereof. 4,354,966, Cl. 260-112.50R.
Kitchen, Donald R., to United States of America, Air Force. Low temperature braze alloy and composite. 4,355,084, Cl. 428-672.000.
Kitchener, William R.: *See—*
Sama, Stephen L.; and Kitchener, William R., 4,355,228, Cl. 235-92.0PC.
Kitzelmann, Dieter: *See—*
Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.
Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., to Skandinanisk Tobakskompagni A/S. Device for spreading tobacco leaves. 4,354,511, Cl. 131-324.000.
Klauber, Stefan J.: *See—*
Roppatte, Michael, Jr., 4,354,512, Cl. 132-88.500.
Klemm, Robert E.: *See—*
Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.
Klepetar, Manfred: *See—*
Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.
Klesper, Hugo: *See—*
Busse, Oswald; and Klesper, Hugo, 4,354,947, Cl. 210-790.000.
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., to Westwood Pharmaceuticals, Inc. Composition for treating acne vulgaris. 4,355,028, Cl. 424-230.000.
Kline, Paul J.: *See—*
Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., 4,354,725, Cl. 339-214.00R.
Kmiec, Gregory E., to Bally Manufacturing Corporation. Pinball game including elevated ball pathway. 4,354,680, Cl. 273-121.00A.
Kmita, Anatoly M.: *See—*
Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,355,290, Cl. 333-195.000.
Knaitner, Eugene L.: *See—*
Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
Knapp, Heinrich; and Maisch, Wolfgang, to Robert Bosch GmbH. Fuel injection system. 4,354,472, Cl. 123-493.000.
Knickerbocker, Michael G., to Seaquist Valve Co., Div. of Pittway Corp. Child resistant assembly for aerosol dispensers. 4,354,621, Cl. 222-47.000.
Knight, Alan C.: *See—*
Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
Knightley, Jack A., to Scott Bader Company Limited. Adhesive coatings of prepasted wall coverings. 4,355,073, Cl. 428-350.000.
Knittel, Volker: *See—*
Stemmler, Hermann; and Knittel, Volker, 4,355,074, Cl. 428-350.000.
Knobbe, Karl-Heinz; and Noldge, Hellmut, to Herfurth GmbH. Resonant circuit arrangement. 4,355,286, Cl. 330-56.000.
Knorr-Bremse GmbH: *See—*
Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.
Knowles, Albert H., to Rines, Robert Harvey, a part interest. Method of and apparatus for enabling access to the interior of fish-farming ponds and the like. 4,354,457, Cl. 119-3.000.
Koba, Keiichiro: *See—*
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
Kobayashi, Kazutaka: *See—*
Yoshida, Shinichi; and Kobayashi, Kazutaka, 4,355,329, Cl. 358-108.000.
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, to Diesel Kiki Company, Ltd. Fuel injection advance angle control apparatus. 4,354,474, Cl. 123-502.000.
Kobori, Masaharu: *See—*
Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.
Koch, Bernhard R.; and Vogelbacher, Erich, to Sulzer Brothers Ltd. Crossing thread supply system for a weaving machine. 4,354,530, Cl. 139-54.000.
Koch, Heinz: *See—*
Grimminger, Albert; and Koch, Heinz, 4,354,814, Cl. 425-186.000.
Kock, Hendrikus G., to U.S. Philips Corporation. Coupler comprising a light source and lens. 4,355,323, Cl. 357-74.000.
Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, to Toray Silicone Co., Ltd. Cyclofluorosilicone-containing compositions for the treatment of fibers. 4,355,149, Cl. 528-18.000.
Kohjin Co., Ltd.: *See—*
Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, 4,354,997, Cl. 264-560.000.
Kohonen, Raimo, to Enso-Gutzeit Osakeyhtio. Filter press. 4,354,934, Cl. 210-386.000.
Koike, Susumu; and Iwasa, Hitoo, to Matsushita Electric Industrial Co., Ltd. Substrate holder for liquid phase epitaxial growth. 4,354,453, Cl. 118-426.000.
Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, to Konishiroku Photo Industry Co., Ltd. Dry-type developing device. 4,354,763, Cl. 366-181.000.
Kojima, Kana: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
Kollross, Gunter. Device for axial shirring of synthetic tubular material for further processing, especially on automated sausage stuffers. 4,354,295, Cl. 17-1.00R.
Komori Printing Machinery Co., Ltd.: *See—*
Kuroda, Tamio, 4,354,673, Cl. 271-227.000.
Komori, Ryuichi: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
Koninklijke Emballage Industrie Van Leer, B.V.: *See—*
Gash, Duggan J., 4,355,076, Cl. 428-411.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, 4,354,763, Cl. 366-181.000.
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

Kools, Franciscus X. N. M.; and Strijbos, Sytse, to U.S. Philips Corporation. Method of manufacturing a magnet body. 4,354,993, Cl. 264-86.000.

Kopolow, Steven L., to Personal Products Company. Flexible absorbent boards. 4,354,901, Cl. 162-158.000.

Koppel, Gary A.; and Cooper, Robin D. G., to Eli Lilly and Company. Process for 4-(D-3-amino-3-carboxypropoxy)-phenylglyoxylic acid oxime derivatives. 4,355,172, Cl. 560-29.000.

Korionoff, Victor S., Jr.; and Magsaysay, Miguel A. Sail power device. 4,354,803, Cl. 416-81.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,354,729, Cl. 339-258.00R.

Koseki, Fumio: *See*—
Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, 4,354,802, Cl. 415-207.000.

Kosten, Richard B., to GTE Automatic Electric Labs Inc. Wall telephone cradle assembly. 4,355,212, Cl. 179-100.00C.

Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Method for solidifying aqueous radioactive wastes for noncontaminating storage. 4,354,954, Cl. 252-629.000.

Koto, Masaaki, to Toyo Kogyo Co., Ltd. Rear tire house structure for freight vehicle bodies. 4,354,708, Cl. 296-185.000.

Kouno, Kageaki: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.

Koyama, Kunio: *See*—
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,355,054, Cl. 427-61.000.

Koyanagi, Mitsumasa: *See*—
Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.

Kozak, Joseph H., Jr. Squelch control circuit for amplitude modulated RF receivers. 4,355,417, Cl. 455-218.000.

Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Azo reactive dyestuffs having an aryl-triazinyl-aryl diazo component. 4,354,968, Cl. 260-146.00T.

Krasnov, Mikhail M.; and Pivovarov, Nikolai N. Artificial eye lens. 4,354,286, Cl. 3-13.000.

Krill, Wayne V.: *See*—
Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, 4,354,821, Cl. 431-7.000.

Kristoffersson, Ingmar; and Heurlin, Gustav S., to Alfa-Laval AB. Heat exchanger. 4,354,551, Cl. 165-166.000.

Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., to Racal-Milgo, Inc. Data modem false equilibrium circuit. 4,355,402, Cl. 375-11.000.

Kruger, Gerhard; and Kepplinger, Werner, to Metallgesellschaft Aktiengesellschaft. Process of drying and calcining bulk materials. 4,354,826, Cl. 432-18.000.

Kubo, Kazuyuki; and Katagiri, Shigenobu, to Hitachi Koki Company, Limited. Microcomputer having a ram for storing parity bits. 4,355,393, Cl. 371-51.000.

Kuechler, Jurgen; Gabler, Reinhold, deceased; and by Funk nee Gabler, Inge, legal representative. Internal combustion engine. 4,354,462, Cl. 123-241.000.

Kugler, William E.; and Pacello, James M. Combination roofing material unrolling and heat applying apparatus. 4,354,893, Cl. 156-497.000.

Kulik, John J., to United States of America, Navy. 360 Degree closed circuit television system. 4,355,328, Cl. 358-87.000.

Kulpa, Walter J.; and Paulik, John R., to Pitney Bowes Inc. Sheet stacking and aligning apparatus. 4,354,672, Cl. 271-221.000.

Kumar, Rakesh: *See*—
Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.

Kumar, Tribhawan; and Wolpert, Kris E., to General Electric Company. Method for filtering particulates. 4,354,858, Cl. 55-6.000.

Kuo, Chia-Huei A.: *See*—
Keller, George E., II; and Kuo, Chia-Huei A., 4,354,859, Cl. 55-25.000.

Kuraray Co., Ltd.: *See*—
Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, 4,354,308, Cl. 29-571.000.

Kuroda, Tamio, to Komori Printing Machinery Co., Ltd. Inadequately fed sheet detectors for use in sheet-fed press. 4,354,673, Cl. 271-227.000.

Kuroda, Yoichi; and Tamamori, Hideo, to Nippon Air Brake Co., Ltd. Diaphragm piston operated valve device. 4,354,518, Cl. 137-112.000.

Kuroki, Toshio: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Kuschmierz, Heinz: *See*—
Geyer, Gerhard; and Kuschmierz, Heinz, 4,354,473, Cl. 123-501.000.

Kuwabara, Takao, to Hitachi, Ltd. Method of controlling pump turbine. 4,354,800, Cl. 415-1.000.

Kuy, Bert. Thixotropic aluminum hydroxide chloride and medical and other applications thereof. 4,355,020, Cl. 424-28.000.

Kydd, Paul H., to Hydrocarbon Research, Inc. Phase separation of hydrocarbon liquids using liquid vortex. 4,354,852, Cl. 23-230.00A.

Kyoritsu Manufacturing Co., Ltd.: *See*—
Yagi, Kazutomo, 4,354,344, Cl. 59-35.00R.

L. & C. Steinmuller GmbH: *See*—
Pohl, Kurt M., 4,354,939, Cl. 210-637.000.

LaBaire, William P., to Coppus Engineerng Corporation. Reaction fan with noise suppression. 4,354,801, Cl. 415-80.000.

Lake Shore Ceramics, Inc.: *See*—
Lawless, William N., 4,354,355, Cl. 62-6.000.

Lakin, John; and Watson, Philip R., to Moorwats Safety Systems Limited. Protective system for use in transfer of hazardous substances. 4,354,571, Cl. 180-271.000.

Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Method for preparing stable aqueous dispersions of ionomer resins. 4,355,125, Cl. 524-401.000.

Lam, Kit M.: *See*—
Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., 4,354,311, Cl. 29-840.000.

Lamm, Gunther: *See*—
Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, 4,354,969, Cl. 260-156.000.

Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Hydraulic lifting arrangement for implements, especially on tractors. 4,354,555, Cl. 172-4.000.

Langdon, Joel A., to Monahan, Joseph F., Jr.; Ellis, Ben B., Sr.; and Nace, Grace M. Garment with score indicia and attachable score recording markers. 4,354,282, Cl. 2-115.000.

Langdon, Robert S., to General Electric Company. Self-aligning bearing assembly. 4,355,250, Cl. 310-88.000.

Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Spacer escalator for spacing loads in carton loading machines. 4,354,590, Cl. 198-425.000.

Lantero, Oreste J., Jr., to Miles Laboratories, Inc. Glutaraldehyde/-polyethylenimine immobilization of whole microbial cells. 4,355,105, Cl. 435-94.000.

Lapple, Werner: *See*—
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.

Lassalle, Dominique; and Havas, Laszlo, to Naphtachimie. Process for the polymerization of ethylene and the resulting products. 4,355,143, Cl. 526-119.000.

Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., to R & D Associates. Engine system using liquid air and combustible fuel. 4,354,565, Cl. 180-54.00B.

Lau, Keyser K.: *See*—
Lauer, James L.; and Lau, Keyser K., 4,355,231, Cl. 250-253.000.

Laue, Charles E., to Hamilton-Pax, Inc. Compression rod assembly. 4,354,353, Cl. 60-554.000.

Lauer, James L.; and Lau, Keyser K., to Suncor Inc. Remote analysis using thermal radiation. 4,355,231, Cl. 250-253.000.

Lavery, John J., to Champion International Corporation. Carton with inverted internal platform and carton blank therefor. 4,354,596, Cl. 206-45.310.

Lavoisard, Jean-Louis: *See*—
Israel, Renato G.; Lavoisard, Jean-Louis; and Marchand, Jean-Claude, deceased, 4,355,206, Cl. 179-18.0HB.

Lawford, Hugh G., to George Weston Limited. Continuous process for the production of gelable exopolysaccharide. 4,355,106, Cl. 435-101.000.

Lawless, William N., to Lake Shore Ceramics, Inc. Thallous halide materials for use in cryogenic applications. 4,354,355, Cl. 62-6.000.

Layer, Robert W.; and Tenney, Linwood P., to B. F. Goodrich Company, The. Norbornene polymers containing bound phenolic antioxidant. 4,355,148, Cl. 526-281.000.

Lazarus, Norman R., to Burroughs Wellcome Co. Biologically active amides. 4,355,025, Cl. 424-177.000.

Lazy S. Mining and Development Corp.: *See*—
O'Toole, James P.; and Mylar, James L., 4,354,475, Cl. 123-525.000.

Lechner, Hubert; and Steinle, Benedikt, to LGZ Landis & Gyr Zug AG. Synchronous motor. 4,355,252, Cl. 310-162.000.

Lee, Hop. Electric plug. 4,354,723, Cl. 339-103.00R.

Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Corporation. Stable high performance bipolar membrane with cross-linked functional groups. 4,355,116, Cl. 521-27.000.

Lee, Raymond: *See*—
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,355,120, Cl. 521-189.000.

Lee, Robert E. Solar space vehicle. 4,354,348, Cl. 60-203.100.

Lee, Ronald B., to Zenith Radio Corporation. Bandwidth enhancement network for color television signals. 4,355,326, Cl. 358-37.000.

Lee, Rupert A.: *See*—
Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., 4,354,906, Cl. 204-157.10H.

Lee, Yue-Guey L.; and Zamek, Otto S., to General Electric Company. Polyetheramideimide resins and electrical conductors insulated therewith. 4,354,965, Cl. 524-104.000.

Legras, Jacques; and Pyronnet, Patrice. Remote control systems for telecommunications links. 4,355,215, Cl. 179-175.31R.

Lehmann, Werner: *See*—
Dorer, Wilfried; Fuss, Manfred; and Lehmann, Werner, 4,354,674, Cl. 271-296.000.

Lein, Joseph: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.

LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o.: *See*—
Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, 4,354,940, Cl. 210-698.000.
Lemaire, Francis R. J. M.: *See*—
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,355,356, Cl. 364-200.000.
Lentz, Arthur H. Plaster and dry wall hole repair. 4,354,332, Cl. 52-514.000.
Lenz, Werner: *See*—
Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, 4,355,093, Cl. 430-275.000.
Leo Gottwald KG: *See*—
Hilgers, Franz, 4,354,607, Cl. 212-175.000.
Les Laboratoires Meram: *See*—
Durlach, Jean P., 4,355,043, Cl. 424-289.000.
Le Sausse, Robert T.; and Van den Berg, Johan H., to Champion Spark Plug Europe S.A. Arm to blade connector. 4,354,293, Cl. 15-250.320.
Lesowsky, Joseph. Tool for operating wall anchors. 4,354,375, Cl. 72-449.000.
Lester, James P. Implantable artificial kidney. 4,354,933, Cl. 210-257.200.
Leupold, Ernst I.: *See*—
Baltes, Herbert; and Leupold, Ernst I., 4,355,187, Cl. 568-471.000.
Levinson, Stephen E.: *See*—
Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.
Levolor Lorentzen, Inc.: *See*—
Anderle, Joseph A., 4,354,300, Cl. 24-343.000.
Levy, Didya D.: *See*—
Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.
Levy, Michel; and Haag, Jean-Philippe, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Adaptive echo canceller for full-duplex transmission of data. 4,355,214, Cl. 179-170.200.
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier. Devices for measuring parameters which can modify the charge of an electret. 4,355,235, Cl. 250-376.000.
Lewis, Cheri J. Support for mounting metal mirror on teeth. 4,354,835, Cl. 433-30.000.
Lewis, John G.: *See*—
Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., 4,354,906, Cl. 204-157.10H.
Lewis, Robert T., to Chevron Research Company. Method and apparatus for recovering magnetic particles. 4,354,856, Cl. 55-3.000.
Lewis, Robert T.; and Sexstone, John H., to Brown & Williamson Tobacco Corporation. Apparatus for depositing a coupon on a package. 4,354,894, Cl. 156-517.000.
Lewis, Tom: *See*—
Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.
Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., to General Electric Company. Voltage regulating system. 4,355,242, Cl. 307-252.00N.
LGZ Landis & Gyr Zug AG: *See*—
Lechner, Hubert; and Steinle, Benedikt, 4,355,252, Cl. 310-162.000.
Li, Chou H. Sampling method. 4,354,391, Cl. 73-863.110.
Liebert, Karl-Heinz: *See*—
Tischer, Werner; and Liebert, Karl-Heinz, 4,354,350, Cl. 60-384.000.
Lienhard, Paul: *See*—
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,355,159, Cl. 542-417.000.
Light, Fred W., Jr.: *See*—
Dombroski, John R.; and Light, Fred W., Jr., 4,355,136, Cl. 525-35.000.
Likins, Merle R., Jr.: *See*—
Stacy, Galen D.; and Likins, Merle R., Jr., 4,355,016, Cl. 423-450.000.
Lin, Chun N. Manually driven generating mechanism for doorbells. 4,354,448, Cl. 116-161.000.
Lin, Kou C., to Electric Power Research Institute, Inc. Method of field annealing an amorphous metal core by means of induction heating. 4,355,221, Cl. 219-10.430.
Lin, Mei-Jan L.: *See*—
Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., 4,354,872, Cl. 106-14.270.
Linde Aktiengesellschaft: *See*—
Weber, Gunter, 4,355,011, Cl. 423-224.000.
Linder, Morris B.; and Beffano, John J., to Quality Valve & Machine Works, Inc. Swivel joint construction for pressure containing conduit. 4,354,698, Cl. 285-98.000.
Lindsey, James C., to Cavalier Corporation. Alternator mechanism for dispensing machine. 4,354,615, Cl. 221-116.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., to Miller Brewing Company. Method of preparing a low calorie beer. 4,355,047, Cl. 426-13.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., to Miller Brewing Company. Preparation of debranching enzyme from rice for producing a low calorie beer. 4,355,110, Cl. 435-210.000.
Lisiecki, Mieczyslaw J.: *See*—
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,354,789, Cl. 414-104.000.
Liu, Kang-Jen: *See*—
Lee, Lester T. C.; and Liu, Kang-Jen, 4,355,116, Cl. 521-27.000.
Livigni, Russell A.: *See*—
Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
Logan, Clifford K., Jr., to Haney, Bell Charles, a part interest. Reciprocating drill bit. 4,354,561, Cl. 175-321.000.
Logan, Emanuel L., to Reliable Security Systems, Inc. Apparatus for delaying opening of doors. 4,354,699, Cl. 292-201.000.
Logan, William F. Support structure for folding tables and like structures. 4,354,437, Cl. 108-153.000.
Lone Star Steel Company: *See*—
Greer, James B., 4,354,882, Cl. 148-12.00R.
Looney, Gary W., to RCA Corporation. Apparatus for oscillating a gas manifold in a rotary disc reactor. 4,354,455, Cl. 118-700.000.
L'Oreal: *See*—
Brun, Alain; Marcotte, Louis; and Szarazi, Bela, 4,354,406, Cl. 83-24.000.
Lorenz, Kurt: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dunga, Horst, 4,354,903, Cl. 201-6.000.
Lorenz, Peter; and Schwaier, Anita, to Battelle-Institut e.V. Hepatitis A testing and growth in tree shrew as animal model. 4,355,019, Cl. 424-9.000.
Losert, Gerhard K., to General Electric Company. Visual device for ice cube trays. 4,354,384, Cl. 374-134.000.
Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, to Manville Service Corporation. Method of curing polyester resin in the presence of rubber. 4,354,891, Cl. 156-307.300.
Lotterer, John F., III: *See*—
Hall, Roger W.; and Lotterer, John F., III, 4,354,359, Cl. 62-299.000.
Low, Leonard J. Apparatus for guiding lift truck mast segments. 4,354,579, Cl. 187-95.000.
Lowder, Dale E., to McGraw-Edison Company. Power cord storage device. 4,354,650, Cl. 248-49.000.
Lowe, Derek: *See*—
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Lowe, Frank E.: *See*—
Walker, Harold R., 4,355,205, Cl. 179-2.00A.
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Modahl, Robert J.; and Luckeroth, Virgil C., 4,354,550, Cl. 165-133.000.
Ludi, Roger; and Hinni, Bernhard, to Satronic AG. Control device, particularly for automatic furnaces. 4,355,292, Cl. 335-145.000.
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Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., 4,355,269, Cl. 318-436.000.
Lumelleau, Adrian, to Presray Corporation, The. Lightweight, removable gate seal. 4,355,000, Cl. 376-205.000.
Luzzi, Glenn J., to Amerace Corporation. Attachment arrangement for high voltage electrical connector. 4,354,721, Cl. 339-94.00R.
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Fischer, Hermann, 4,354,431, Cl. 101-247.000.
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Hammond, Kenneth G.; and Maas, Garren E., 4,354,950, Cl. 252-51.50A.
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Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., 4,354,825, Cl. 432-14.000.
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Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, to Tokico Ltd. Vehicle height adjusting device. 4,354,693, Cl. 280-714.000.
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Eichbaum, Gerhard; and Heidemann, Wolfgang, 4,354,670, Cl. 266-281.000.
Ratschat, Gunter, 4,354,669, Cl. 266-140.000.
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Manson, Harry G., to IMC Magnetics Corp. Stepper motor. 4,355,248, Cl. 310-42.000.
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Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.
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Martin, Philip N., 4,354,572, Cl. 181-116.000.
Marbry, Steven L. Fluid transfer device. 4,354,491, Cl. 128-214.400.
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Svendsen, Robert A., 4,354,667, Cl. 254-332.000.
Markusch, Peter; Hudson, George A., deceased; and by White, Richard L., administrator, to Mobay Chemical Corporation. Polyisocyanate adducts with apolar solvent compatibility and good storage stability. 4,355,138, Cl. 525-127.000.
Marmet, Melvin L., to Rockwell International Corporation. Sense amplifier and method for small bit line swing with short propagation delay for high speed MOS memories. 4,355,247, Cl. 307-530.000.
Marmo, Anthony R., to Westinghouse Electric Corp. Workpiece pellet length control apparatus. 4,354,811, Cl. 425-140.000.
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Marshall, Wilbur A. Glazier's punch. 4,354,701, Cl. 294-1.00R.
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Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, 4,354,821, Cl. 431-7.000.
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Boxall, Larry G.; and Nagle, Dennis C., 4,354,918, Cl. 204-286.000.
Gamson, Bernard W.; and Hayden, Howard W., Jr., 4,355,017, Cl. 423-484.000.
Martin, Philip N., to Mapco, Inc. Portable seismic energy source. 4,354,572, Cl. 181-116.000.
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Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, to Fiat Societa per Azioni. Process for sintering silicon nitride compacts. 4,354,990, Cl. 264-65.000.
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Mathis, Paul; and Zimmer, Max, 4,354,317, Cl. 34-33.000.
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Matsueda, Gary R.: *See*—
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Matsumoto, Nobuyuki: *See—*
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Matsuoka, Hiroyoshi: *See—*
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Koike, Susumu; and Iwasa, Hitoo, 4,354,453, Cl. 118-426.000.
Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, 4,354,337, Cl. 53-559.000.
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Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.

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Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, 4,355,319, Cl. 346-76.0PH.

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Matth. Hohner AG: *See—*
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McAndrew, Miles J., to UOP Inc. Poppet damper with gas flow turning means. 4,354,528, Cl. 137-875.000.

McArdle, Edward J., to Illinois Tool Works Inc. Packaging apparatus. 4,354,333, Cl. 53-48.000.

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Zeidler, James R.; McCool, John M.; and Widrow, Bernard, 4,355,368, Cl. 364-728.000.

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McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., to Coca-Cola Company, The; and Cornelius Company, The. Pneumatically powerable double acting positive displacement fluid pump. 4,354,806, Cl. 417-393.000.

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McPhee, Charles J., to American Hospital Supply Corporation. Medical administration set with backflow check valve. 4,354,492, Cl. 128-214.00E.

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Kafka, Charles F.; and Kafka, Robert S., 4,354,445, Cl. 114-218.000.

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Kahn, Alan R., 4,354,497, Cl. 128-419.00D.

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Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.

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Romer, Michael, 4,354,976, Cl. 260-349.000.
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Johnson, Daniel E., 4,354,371, Cl. 72-53.000.

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Volk, Hans-Joachim; and Forkel, Michael, 4,354,696, Cl. 280-804.000.

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Hummer, Roland; Reinisch, Joseph; and Thury, Wolfgang A., 4,354,869, Cl. 75-63.000.

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Luchinger, Paul; and Stutz, Andreas, 4,354,563, Cl. 177-212.000.

Meyer, Alfons. Method for orderly transport and storage of flat objects and a plastic bag suitable therefor. 4,354,335, Cl. 53-475.000.

Meyer, Jerry A.: *See*—
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
Meyer, Nicolas; and Cousin, Michel, to Societe Chimique des Charbonnages SA. Furan resins of improved fire resistance. 4,355,145, Cl. 526-195.000.
Mid-America Body & Equipment Co.: *See*—
Perry, Marvin D., 4,354,793, Cl. 414-546.000.
Midian Electronics, Inc.: *See*—
Soulliard, Charles, 4,355,210, Cl. 179-84.0VF.
Midland-Ross Corporation: *See*—
Kissel, Roland R., 4,354,827, Cl. 432-21.000.
Migita, Jyunichiro: *See*—
Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, 4,354,877, Cl. 106-90.000.
Migliarini, Cesare: *See*—
Tarantola, Luciano; and Migliarini, Cesare, 4,354,892, Cl. 156-398.000.
Mihara, Shin'ichi, to Olympus Optical Co., Ltd. Attachment lens system. 4,354,743, Cl. 350-464.000.
Milchem Incorporated: *See*—
Bingham, Marion G.; and Reagan, Leonard D., 4,354,513, Cl. 134-104.000.
Miles Laboratories, Inc.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,355,165, Cl. 544-237.000.
Boguslawski, George; and Rynski, Michael J., 4,355,103, Cl. 435-34.000.
Lantero, Oreste J., Jr., 4,355,105, Cl. 435-94.000.
Miller Brewing Company: *See*—
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.
Miller, Stephen J., to Chevron Research Company. Dual component chromia silicate cracking catalyst. 4,354,924, Cl. 208-120.000.
Milliken Research Corporation: *See*—
DeMott, Roy P., 4,355,065, Cl. 428-195.000.
Milliner, Ken: *See*—
Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.
Milner, Christopher J., to Unisearch Limited. Temperature-cycled cold trap. 4,354,356, Cl. 62-55.500.
Mine Safety Appliances Company: *See*—
Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., 4,355,234, Cl. 250-343.000.
Miner, Robert M. Methods and apparatus for testing roundness and straightness of pipes and tubings. 4,354,379, Cl. 73-37.000.
Minigrip, Inc.: *See*—
Tilman, Paul A., 4,354,541, Cl. 150-3.000.
Mink, Robert I.: *See*—
Epstein, Ronald A.; and Mink, Robert I., 4,354,959, Cl. 252-429.00B.
Minolta Camera Kabushiki Kaisha: *See*—
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.
Mitchell, Joan L., to International Business Machines Corporation. Dynamic stack data compression and decompression system. 4,355,306, Cl. 340-347.0DD.
Mitel Corporation: *See*—
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Kajiyama, Ryuichi, 4,354,576, Cl. 187-29.00R.
Yonemoto, Masashi, 4,354,577, Cl. 187-29.00R.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Fuchigami, Mitsuru, 4,354,697, Cl. 282-27.500.
Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, 4,355,090, Cl. 430-204.000.
Mitsubushi Kinzoku Kabushiki Kaisha: *See*—
Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.
Mitsui Coke Co., Ltd.: *See*—
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
Mitsui-Kozan Coking Industry Co., Ltd.: *See*—
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, 4,355,190, Cl. 568-754.000.
Mitsui Toatsu Chemical, Inc.: *See*—
Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply apparatus in internal combustion engine. 4,354,470, Cl. 123-472.000.
Miyashita, Atsushi: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
Miyauchi, Akio, to Fuji Photo Film Co., Ltd. Laser recording monitoring system. 4,355,318, Cl. 346-76.00L.
Miyazaki, Hiroshi: *See*—
Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, to Fuji Electric Co., Ltd.; and Sankyo Company, Limited. Device for inspecting the external appearance of solid medicine. 4,354,602, Cl. 209-545.000.
Mizerak, Robert J.: *See*—
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.
Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, to Kohjin Co., Ltd. Heat shrinkable film and process for preparing the same. 4,354,997, Cl. 264-560.000.
Mobay Chemical Corporation: *See*—
Iliopulos, Miltiadis I.; and Baumann, Gert F., 4,355,118, Cl. 521-108.000.
Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.
Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Yan, Tsoung Y., 4,354,928, Cl. 208-309.000.
Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.
Dennis, Charles L.; and Harrell, John W., 4,355,378, Cl. 367-33.000.
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,354,922, Cl. 208-68.000.
Goldstein, Theodore P.; and Rollmann, Louis D., 4,354,870, Cl. 75-108.000.
Iwasawa, Teruo; and Tojiki, Hitomi, 4,355,268, Cl. 318-314.000.
Medlin, William L.; Masse, Lucien; and Sexton, James H., 4,354,381, Cl. 73-151.000.
Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., 4,354,927, Cl. 208-251.00H.
Modahl, Robert J.; and Luckeroth, Virgil C., to Trane Company, The. Heat transfer surface for efficient boiling of liquid R-11 and its equivalents. 4,354,550, Cl. 165-133.000.
Mogi, Takehiko: *See*—
Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.
Mohn, Ulrich: *See*—
Bechthold, Horst; and Mohn, Ulrich, 4,355,013, Cl. 423-242.000.
Moller, Hans J.: *See*—
Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.
Monahan, Joseph F., Jr.: *See*—
Langdon, Joel A., 4,354,282, Cl. 2-115.000.
Mones, Arthur H.: *See*—
Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., 4,354,311, Cl. 29-840.000.
Monsanto Company: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,355,139, Cl. 525-133.000.
Montedison S.p.A.: *See*—
Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.
Moore, Charles E. Dental appliance for use in combination with a saliva ejector. 4,354,837, Cl. 433-91.000.
Moore, Cyril G.: *See*—
Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.
Moorwats Safety Systems Limited: *See*—
Lakin, John; and Watson, Philip R., 4,354,571, Cl. 180-271.000.
Moravec, John V.; Carlson, William P.; and McGowan, Michael J., to Nuvatec, Inc. Automatic note analyzer. 4,354,418, Cl. 84-454.000.
Morel, Henri, to ITW de France. Terminal connector device for electrical conducting wires. 4,354,722, Cl. 339-95.00D.
Moretto, Hans-Heinrich: *See*—
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,355,171, Cl. 556-446.000.
Morgan, Allan C.; and Puckett, Dan K., to Cabot Corporation. Self-cleaning apparatus for removing material from a rotating drum. 4,354,592, Cl. 198-703.000.
Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, to Matsushita Electric Industrial Co., Ltd. Apparatus for packaging electrical circuit components. 4,354,337, Cl. 53-559.000.
Mori, Shinya: *See*—
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
Morikawa, Masaki: *See*—
Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.
Morimoto, Akira: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
Moro, Kanji: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, To-

shiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Morris, Kenneth J. Moulding apparatus for compacting powdered materials. 4,354,818, Cl. 425-405.00H.

Morris, Richard L.: *See*—
Heismann, Richard A.; and Morris, Richard L., 4,354,461, Cl. 123-195.0AC.

Morrow, William D.; and Bath, William R. Bearing assembly for a pedestal crane. 4,354,606, Cl. 212-175.000.

Mortimer, Ivan: *See*—
Farr, Glyn P. R.; and Mortimer, Ivan, 4,354,715, Cl. 303-116.000.

Morton, Daniel D.: *See*—
Cording, Richard W.; and Morton, Daniel D., 4,355,305, Cl. 340-347.0SY.

Moss, Jack. Gasoline dispensing nozzle. 4,354,536, Cl. 141-383.000.

Motegi, Shoji: *See*—
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Motor Wheel Corporation: *See*—
Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,354,407, Cl. 83-55.000.

Motorola, Inc.: *See*—
Davis, Walter L.; and Jacobson, James E., Jr., 4,355,277, Cl. 323-351.000.
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.

Motosacoche S.A.: *See*—
Collombin, Andre-Marcel, 4,354,813, Cl. 425-182.000.

Mouissie, Bob, to Du Pont de Nemours, E. I., and Company. Self-aligning optical fiber connector. 4,354,731, Cl. 350-96.210.

Mouly, Raymond J., to PPG Industries, Inc. Method of bidirectionally attenuating glass in a float process with edge cooling. 4,354,866, Cl. 65-99.500.

Mueller, Friedrich, to Siemens Aktiengesellschaft. Device for disconnecting the receiver in case of a small signal-to-noise ratio for a digital-modulated radio system. 4,355,407, Cl. 375-91.000.

Mueller, Richard A., to G.D. Searle & Co. Hydroxy-substituted phosphoranes and salts. 4,355,182, Cl. 568-11.000.

Muhlberger, Emil: *See*—
Schmidt, Peter; and Muhlberger, Emil, 4,354,703, Cl. 294-64.00R.

Murakami, Tsugio; Igawa, Kazushige; and Hiraga, Yoichi, to Toyo Soda Manufacturing Co., Ltd. Stable calcium hypochlorite composition and method for manufacture thereof. 4,355,014, Cl. 423-265.000.

Murata, Yoichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection pump operating condition detector. 4,354,380, Cl. 73-119.00A.

Murayama, Masaki: *See*—
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,355,389, Cl. 371-18.000.

Murfitt, Robert R.; and Burtt, Richard F., to Vaughn Corporation. Electrode. 4,354,508, Cl. 128-798.000.

Murphy, Joseph J.: *See*—
Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.

Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., to International Standard Electric Corporation. Arrangement for continuously controlling track-bound vehicles. 4,354,649, Cl. 246-187.00B.

Muzio, Andrew R., to Georgia Tech Research Institute. Dish antenna and method for making. 4,355,317, Cl. 343-840.000.

Myers, George D.; and Busch, Lloyd E., to Ashland Oil, Inc. Carbometallic oil conversion with liquid water, ballistic separation and controlled $CO:CO_2$ ratio during catalyst regeneration. 4,354,923, Cl. 208-113.000.

Myers, Melvyn J., to Du Pont de Nemours, E. I., and Company. 4,5-Bis-(4-fluorophenyl)-1-(4-nitrobenzyl)-2-[((1,1,2,2-tetrafluoroethyl)sulfonyl]-1H-imidazole, composition and use. 4,355,041, Cl. 424-273.00R.

Mylar, James L.: *See*—
O'Toole, James P.; and Mylar, James L., 4,354,475, Cl. 123-525.000.

N/S Car Wash Enterprises, Inc.: *See*—
Ennis, George T., 4,354,291, Cl. 15-53.0AB.

N. V. Philips Gloeilampenfabrieken: *See*—
Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.

Naarmann, Herbert: *See*—
Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, 4,355,093, Cl. 430-275.000.

Nabeyama, Hiroaki: *See*—
Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.

Nabisco Brands, Inc.: *See*—
Antrim, Richard L.; and Hurst, Louis S., 4,355,117, Cl. 521-28.000.

Nace, Grace M.: *See*—
Langdon, Joel A., 4,354,282, Cl. 2-115.000.

Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Inc. Jet layer granulator. 4,354,450, Cl. 118-303.000.

Naganawa, Hiroshi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, to Nippon Steel Corporation. Process for production of a low hydrogen type covered arc-electrode. 4,355,054, Cl. 427-61.000.

Naganokeiki Seisakujo Company, Ltd.: *See*—
Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.

Nagase, Hidenobu: *See*—
Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.

Nagase, Masaaki: *See*—
Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, 4,355,319, Cl. 346-76.0PH.

Nagle, Dennis C.: *See*—
Boxall, Larry G.; and Nagle, Dennis C., 4,354,918, Cl. 204-286.000.

Nagumo, Fumio; and Asaida, Takashi, to Sony Corporation. Digital color encoder. 4,355,327, Cl. 358-44.000.

Nagy, Geza: *See*—
Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.

Naifeh, Woodrow W. Slide lock folding blade knife. 4,354,313, Cl. 30-161.000.

Naito, Yukio: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.

Nakada, Teruo: *See*—
Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, 4,354,465, Cl. 123-339.000.

Nakagawa, Hiroaki: *See*—
Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, 4,355,190, Cl. 568-754.000.

Nakagawa, Sachio: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.

Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Nakahashi, Ken-ichi, to Olympus Optical Co., Ltd. Objective optical system for endoscopes. 4,354,734, Cl. 350-96.260.

Nakajima, Makoto, to Fujitsu Limited. Process for forming contact through holes. 4,354,897, Cl. 156-643.000.

Nakajima, Takato, to Kanetsu Kogyo Kabushiki Kaisha. Device for separating mixture. 4,354,930, Cl. 209-221.000.

Nakamura, Kenji: *See*—
Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.

Nakamura, Mamoru; and Kanayama, Akikatsu, to Nippon Zeon Co. Ltd. Process for removing water-soluble protein from vinyl chloride resin. 4,355,146, Cl. 526-199.000.

Nakamura, Takashi; and Sakashita, Akio, to Sony Corporation. White balance control system. 4,355,325, Cl. 358-29.000.

Nakanishi Metal Works Co., Ltd.: *See*—
Wakabayashi, Takao, 4,354,435, Cl. 104-172.00S.

Nakata, Shinsaku: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.

Nakayama, Hiroyuki: *See*—
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.

Nalco Chemical Company: *See*—
Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., 4,354,872, Cl. 106-14.270.

Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, to Mitsui Petrochemical Industries, Ltd. Process for recovery of resorcinol from aqueous resorcinol solution containing hydroquinone. 4,355,190, Cl. 568-754.000.

Naphtachimie: *See*—
Lassalle, Dominique; and Havas, Laszlo, 4,355,143, Cl. 526-119.000.

Nardozzi, Daniel R.: *See*—
Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., 4,355,234, Cl. 250-343.000.

Naruo, Masaki: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Nash, Martin E.; and Huxley, Edward E., to Phillips Petroleum Company. Decolorization treatment. 4,355,183, Cl. 568-19.000.

National Distillers & Chemical Corp.: *See*—
Frampton, Orville D.; and Baugh, William D., 4,354,978, Cl. 260-410.90R.

National Gypsum Company: *See*—
White, George H., 4,354,885, Cl. 156-39.000.

National Identification Bureau Inc.: *See*—
Jones, William R.; and Harrington, Edgar F., 4,354,387, Cl. 73-597.000.

National Steel Corporation: *See*—
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.

Nawn, George H.: *See*—
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,092, Cl. 430-219.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,101, Cl. 430-564.000.

NCR Corporation: *See*—
Cook, Donald M., 4,355,398, Cl. 375-110.000.
Porter, Sigmund N., 4,355,366, Cl. 364-717.000.
Neathway, Graham: *See*—
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.
Nebashi, Toshiyuki: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer: *See*—
van Turnhout, Jan; and Ahuja, Ramesh C., 4,355,089, Cl. 430-130.000.
Nelms, Carl L.: *See*—
Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.
Nelsen, Suzanne B., to GAF Corporation. Thermoplastic copolyester elastomer. 4,355,155, Cl. 528-301.000.
Nelson, Stephen J., to Upjohn Company, The. Processes for making phosphorus derivatives of aminothiomethylcarbamates. 4,354,975, Cl. 549-220.000.
Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., to Honeywell Information Systems Inc. Solderable conductor composition and a method of soldering a lead to a lead pad. 4,354,311, Cl. 29-840.000.
Neulinger, Franz: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
Neveu, Jean-Louis, to Agence Nationale de Valorisation de la Recherche (ANVAR); and Institut Textile Boulogne-Sur de France. Scouring material. 4,355,067, Cl. 428-253.000.
New England Nuclear Corporation: *See*—
Holsinger, Ronald F., 4,355,236, Cl. 250-396.0ML.
Newell, Ronald. Automatic control valve. 4,354,516, Cl. 137-98.000.
Newman, Martin H. Electronic weighing device. 4,354,562, Cl. 177-210.0EM.
Newman, Nicholas S., to Kendall Company, The. Spot-bonded absorbent composite towel material having 60% or more of the surface area unbonded. 4,355,066, Cl. 428-198.000.
Newport, Duane B. Drive-in expansion fastener. 4,354,782, Cl. 411-61.000.
Newton, Robert P., to Autodynamics, Inc. Tire assembly mounting adapter. 4,354,386, Cl. 73-487.000.
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, to Kansai Paint Co., Ltd. Method for improving the adhesiveness of the surface of a synthetic polymeric substrate to coatings. 4,355,053, Cl. 427-54.100.
Nguyen, Van T.: *See*—
Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.
Nickel, Horst: *See*—
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.
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Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.
Niedballa, Ulrich; and Bottcher, Irmgard, to Schering, Aktiengesellschaft. Antiinflammatory-4,5-diaryl-2-substituted-thio-imidazoles and their corresponding sulfoxides and sulfones. 4,355,039, Cl. 424-273.00R.
Nielsen, Steen H.: *See*—
Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.
Niewisch, Joachim: *See*—
Diepers, Heinrich; and Niewisch, Joachim, 4,354,388, Cl. 73-612.000.
Nifco Inc.: *See*—
Hara, Kunio, 4,354,334, Cl. 53-48.000.
Yuda, Takuo, 4,354,566, Cl. 180-68.00P.
Nihon Yohhin Kabushiki Kaisha: *See*—
Satoh, Tomoyoshi, 4,354,281, Cl. 2-69.500.
Nioh, Susumu: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Teisuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
Nipon Interphone Co., Ltd.: *See*—
Yoshida, Shinichi; and Kobayashi, Kazutaka, 4,355,329, Cl. 358-108.000.
Nippon Air Brake Co., Ltd.: *See*—
Kuroda, Yoichi; and Tamamori, Hideo, 4,354,518, Cl. 137-112.000.
Nippon Columbia K.K.: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
Nippon Electric Co., Ltd.: *See*—
Hiyama, Takashi, 4,355,419, Cl. 455-303.000.
Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.
Ishihara, Hiroyuki, 4,355,420, Cl. 455-317.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Suzuki, Hideo; and Kaneko, Makoto, 4,354,413, Cl. 84-1.010.
Nippon Kogaku K.K.: *See*—
Hasegawa, Hiroshi; and Maida, Osamu, 4,354,750, Cl. 354-128.000.
Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.
Nippon Soda Company Limited: *See*—
Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, 4,355,184, Cl. 568-31.000.
Nippon Soken, Inc.: *See*—
Yamamoto, Shinichi; and Ito, Toshihiko, 4,354,820, Cl. 425-461.000.
Nippon Steel Corporation: *See*—
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,355,054, Cl. 427-61.000.
Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.
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Nakamura, Mamoru; and Kanayama, Akikatsu, 4,355,146, Cl. 526-199.000.
Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, to Hitachi, Ltd. Vaned diffuser. 4,354,802, Cl. 415-207.000.
Nishida, Yasuhiro: *See*—
Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.
Nishii, Michiharu: *See*—
Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,354,423, Cl. 91-369.00A.
Nishikawa, Eiichiro: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.
Nishikawa, Kohei: *See*—
Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,355,040, Cl. 424-273.00R.
Nishikawa, Masaji, to Olympus Optical Company Limited. Developing device with magnetic pole having magnetic spacer members. 4,354,454, Cl. 118-658.000.
Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Load relief device for power steering system. 4,354,422, Cl. 91-358.00R.
Nishiyama, Seiichi; and Yamada, Muneki, to Toyo Seikan Kaisha, Ltd. Method for making a plastic container. 4,354,996, Cl. 264-322.000.
Nissan Jidosha Kabushiki Kaisha: *See*—
Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.
Nissan Motor Company, Limited: *See*—
Asano, Masaharu; and Tanaka, Haruto, 4,355,360, Cl. 364-431.110.
Kanegae, Hidetoshi; and Asano, Masaharu, 4,355,359, Cl. 364-431.040.
Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, 4,354,726, Cl. 339-230.00R.
Kawakami, Yasushi, 4,355,412, Cl. 455-175.000.
Oshiage, Katsunori; and Manaka, Nobuji, 4,354,378, Cl. 73-35.000.
Sato, Yoshimi, 4,354,695, Cl. 280-804.000.
Sone, Kohki; and Kenji, Okamura, 4,354,468, Cl. 123-440.000.
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,354,471, Cl. 123-481.000.
Niwa, Masatake: *See*—
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.
Nixdorf Computer AG: *See*—
Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.
Noack, Fritz, to Dr. Barth GmbH; and F. von Langsdorff Bauverfahren GmbH. Ground covering element having raised portions at the useful side which are separated from one another by dummy gaps, a ground covering element group of such ground covering elements, and a method of producing such ground covering elements. 4,354,773, Cl. 404-41.000.
Noack, Raymond J. Control apparatus. 4,355,271, Cl. 318-480.000.
Noda, Masaru: *See*—
Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
Noddings, John; and Borton, Roland K., to Associated Engineering Limited. Vehicle speed control systems. 4,354,467, Cl. 123-352.000.
Noel, Gilbert: *See*—
Portejoie, Jean-Francois; Noel, Gilbert; and Billy, Jean-Claude, 4,355,387, Cl. 370-102.000.
Nokes, Clarence. Lawn mower apparatus. 4,354,339, Cl. 56-10.200.
Noldge, Hellmut: *See*—
Knobbe, Karl-Heinz; and Noldge, Hellmut, 4,355,286, Cl. 330-56.000.
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Shimizu, Masaki; and Nomura, Takeo, 4,355,111, Cl. 435-243.000.
Nooy, Paulus F. C.: *See*—
Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, 4,355,048, Cl. 426-40.000.
Nordlund, Sven, to Wire Matic Regler AB. Pneumatic operating device. 4,354,424, Cl. 92-69.00R.
Norota, Susumu; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, to Teijin Limited. Novel filament-like fibers and bundles thereof, and novel process and apparatus for production thereof. 4,355,075, Cl. 428-369.000.
Northwestern Ohio Tractor Pullers Assoc.: *See*—
Chamberlain, Robert A., 4,354,390, Cl. 73-862.030.
Northwestern University: *See*—
Goldberg, Erwin, 4,354,967, Cl. 260-112.50R.

Norton, Richard V.; Fisher, Dennis H.; Graham, Garry M.; and Frank, Peter J., to Ashland Oil, Inc. Method for preparing high density liquid hydrocarbon fuels. 4,355,194, Cl. 585-14.000.

Noto, Takao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Novotny, John, Jr.: *See*—
Westdale, Virgil W.; and Novotny, John, Jr., 4,355,088, Cl. 430-98.000.

NPD Research Inc.: *See*—
Johnson, Tod; Tarshis, Andrew; and Goldberg, George, 4,355,372, Cl. 364-900.000.

Nuvatec, Inc.: *See*—
Moravec, John V.; Carlson, William P.; and McGowan, Michael J., 4,354,418, Cl. 84-454.000.

Obendorf, Johann: *See*—
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,355,058, Cl. 427-386.000.

Obi, Tatsurou: *See*—
Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.

Occidental Research Corporation: *See*—
Reiss, Howard, 4,354,857, Cl. 55-6.000.

Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. Thiazolylacetamido cephalosporin type compounds. 4,355,160, Cl. 544-027.000.

Oczkowski, Boguslaw; and Schiff, Norman, to Johnson & Johnson. Fiber/absorbent polymer composites and method of forming same. 4,354,487, Cl. 128-156.000.

Odawara, Yoji: *See*—
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,354,936, Cl. 210-602.000.

Odsvall, Jan, to AB Indesko. Hot top construction. 4,354,658, Cl. 249-202.000.

Oeda, Yoshitaka, to Kanzaki Paper Manufacturing Co., Ltd. Heat-sensitive record material. 4,355,070, Cl. 428-323.000.

Officine Savio S.p.A.: *See*—
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, 4,354,343, Cl. 57-279.000.

Ogawa, Haruki: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Ogawa, Ryota: *See*—
Arai, Yasunori; Ogawa, Ryota; and Ohishi, Michiro, 4,354,756, Cl. 355-3.00R.

Ohba, Shinya: *See*—
Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.

Ohishi, Michiro: *See*—
Arai, Yasunori; Ogawa, Ryota; and Ohishi, Michiro, 4,354,756, Cl. 355-3.00R.

Ohkawa, Tihiro, to General Atomic Company. Divertor assembly for a fusion reactor with thermal barriers. 4,354,998, Cl. 376-140.000.

Ohm, Edward A., to Bell Telephone Laboratories, Incorporated. Wide-field-of-view antenna arrangement. 4,355,314, Cl. 343-779.000.

Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, to Aisin Seiki Co., Ltd. Reaction structure of booster. 4,354,423, Cl. 91-369.00A.

Ohnishi, Noriaki: *See*—
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.

Ohoka, Akihiro: *See*—
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.

Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. α-Substituted ureido-benzylpenicillanic acids. 4,355,038, Cl. 424-271.000.

Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, to Mitsui Coke Co., Ltd.; and Mitsui-Kozan Coking Industry Co., Ltd. Process for the liquefaction of coal. 4,354,919, Cl. 208-10.000.

Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, to Mitsui Toatsu Chemical, Inc. Polymerizing vinyl chloride in reactor treated with condensates. 4,355,141, Cl. 526-62.000.

Okada, Kuniaki: *See*—
Inoue, Takesi; and Okada, Kuniaki, 4,354,372, Cl. 72-177.000.

Okada, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Okada, Taiiti: *See*—
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.

Okada, Toshimi: *See*—
Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.

Okamura, Kazuhiko: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.

Okawa, Takashi: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.

Okayasu, Kunitoshi. Cigarette feeding device. 4,354,617, Cl. 221-147.000.

Okazaki, Hiroshi: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

O'Keefe, David F.: *See*—
Holan, George; and O'Keefe, David F., 4,355,042, Cl. 424-285.000.

Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. Brush holding device for electric rotary machine. 4,355,254, Cl. 310-242.000.

Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, to Sanraku-Ocean Co., Ltd.; and Panlabs, Inc. Streptomyces culture. 4,355,112, Cl. 435-253.000.

Oleck, Stephen M.: *See*—
Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., 4,354,927, Cl. 208-251.00H.

Oleszak, Johann. False ceiling. 4,354,863, Cl. 55-436.000.

Olin Corporation: *See*—
Kaczur, Jerry J.; Tyler, James C., Jr.; and Simmons, John J., 4,354,942, Cl. 210-712.000.
Saeman, Walter C., 4,354,864, Cl. 65-27.000.

Oliver, Don W., to Buckeye Cellulose Corporation, The. Overhead table drape. 4,354,486, Cl. 128-132.00D.

Olsen, Donald F.: *See*—
Geithman, Glenn A.; and Olsen, Donald F., 4,355,222, Cl. 219-10.570.

Olsen, Gregory H.: *See*—
Hawrylo, Frank Z.; and Olsen, Gregory H., 4,355,396, Cl. 372-46.000.

Olympus Optical Co., Ltd.: *See*—
Hosoda, Seiichi, 4,354,749, Cl. 354-33.000.
Mihara, Shin'ichi, 4,354,743, Cl. 350-464.000.
Nakahashi, Ken-ichi, 4,354,734, Cl. 350-96.260.
Nishikawa, Masaji, 4,354,454, Cl. 118-658.000.

Omagari, Masaharu: *See*—
Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.

Omitsu, Takashi, to Aisin Seiki Co., Ltd. Automatic transmission for automobiles. 4,354,401, Cl. 74-689.000.

Omron Tateisi Electronics Company: *See*—
Agatahama, Shunichi, 4,355,291, Cl. 335-128.000.

Ona, Isao: *See*—
Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, 4,355,149, Cl. 528-18.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.

Ono, Takuro: *See*—
Suzuki, Keiichiro; Ono, Takuro; and Shinohara, Nobuhiro, 4,354,991, Cl. 264-65.000.

Onoda Cement Company, Ltd.: *See*—
Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, 4,354,877, Cl. 106-90.000.

Optical Coating Laboratory, Inc.: *See*—
Scanlon, Robert T.; and Gelber, Robert M., 4,354,739, Cl. 350-311.000.

Optimetrix Corporation: *See*—
Wise, Lawrence A., 4,355,272, Cl. 318-561.000.

O'Reilly, Dermod J. K.: *See*—
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.

Orion Machinery Co., Ltd.: *See*—
Haruhara, Tadao, 4,354,479, Cl. 126-92.0AC.

Osaka, Kunihiko: *See*—
Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.

Oshiage, Katsunori; and Manaka, Nobuji, to Nissan Motor Company, Ltd. Knock detecting device. 4,354,378, Cl. 73-35.000.

Oswald, Thomas E. Method of aging felled trees and treating lumber. 4,354,538, Cl. 144-335.000.

Otani, Junji; and Ikenoya, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust system for an internal combustion engine. 4,354,349, Cl. 60-299.000.

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Otani, Syuichi: *See*—
Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, 4,354,726, Cl. 339-230.00R.

Otis Engineering Corporation: *See*—
Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.
Higgins, Robert S., 4,354,524, Cl. 137-624.140.
McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.

O'Toole, James P.; and Mylar, James L., to Lazy S. Mining and Development Corp. Auxiliary supply system. 4,354,475, Cl. 123-525.000.

Otsuka, Kazuo: *See*—
Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.

Otsuka, Susumu: *See*—
Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.

Ott, Russell G., to RCA Corporation. Circuit and method for duty cycle control. 4,355,283, Cl. 328-61.000.

Outboard Marine Corporation: *See*—
Blanchard, Clarence E., 4,354,847, Cl. 440-61.000.
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,354,848, Cl. 440-61.000.
Heismann, Richard A.; and Morris, Richard L., 4,354,461, Cl. 123-195.0AC.

Outokumpu Oy: *See*—
Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.

Owa, Yoshihito: *See*—
Fujita, Masanori; and Owa, Yoshihito, 4,355,381, Cl. 368-187.000.

Owen, Harrold D., to Pengo Industries, Inc. Apparatus for cutting pipe. 4,354,433, Cl. 102-307.000.

Oyama, Tadashi; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Electromagnetic valve. 4,354,525, Cl. 137-625.500.

P. L. Porter Co.: *See*—
Porter, Clyde R., 4,354,398, Cl. 74-501.00R.

Pacello, James M.: *See*—
Kugler, William E.; and Pacello, James M., 4,354,893, Cl. 156-497.000.

Page, John S., Jr. Shock absorption apparatus associated with well pump. 4,354,395, Cl. 74-41.000.

Pallini, Luciano: *See*—
Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.

Palmer, Leon B.; and Conger, Robert P., to Congoleum Corporation. Chemically embossed carpet and the method of carrying out chemical embossing while preserving texture. 4,355,063, Cl. 428-89.000.

Pampalone, Thomas R.; and Kilichowski, Kurt B., to RCA Corporation. Positive radiation sensitive resist terpolymers. 4,355,094, Cl. 430-286.000.

Panchal, Chandrakant J.: *See*—
Zajic, James E.; Gerson, Donald F.; Gerson, Richard K.; and Panchal, Chandrakant J., 4,355,109, Cl. 435-170.000.

Panlabs, Inc.: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.

Pariza, George R.: *See*—
Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.

Park, Joon S.: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,355,147, Cl. 526-264.000.

Parliment, Thomas H.: *See*—
Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., 4,355,049, Cl. 426-535.000.

Parrish, Henry H.: *See*—
Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.

Parry, John, to South Wales Switchgear Limited. Electrical switchgear. 4,355,219, Cl. 200-147.00R.

Parry, John, to South Wales Switchgear Limited. Electrical switchgear of the rotating arc, double-break type. 4,355,220, Cl. 200-147.00R.

Parsons, Ian W.: *See*—
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.

Paschen, Hans-Joachim, to International Standard Electric Corporation. Tunable radio receiver with detuning prevention due to power supply variations. 4,355,422, Cl. 455-343.000.

Passavant-Werke Michelbacher Huette: *See*—
Busse, Oswald; and Klesper, Hugo, 4,354,947, Cl. 210-790.000.

Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,355,139, Cl. 525-133.000.

Patterson, Charles F., to United States of America, Air Force. Survivable target acquisition and designation system. 4,354,419, Cl. 89-1.00A.

Patterson, Harvey J., to Consolidated Papers, Inc. Expandable edge dam assembly for paper coating apparatus. 4,354,452, Cl. 118-413.000.

Paul Wurth S.A.: *See*—
Ulveling, Leon; and Mailliet, Pierre, 4,354,665, Cl. 251-298.000.

Paulik, John R.: *See*—
Kulpa, Walter J.; and Paulik, John R., 4,354,672, Cl. 271-221.000.

Paumard, Alain: *See*—
Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.

Pavelec, John J.: *See*—
Riera, John F.; Bielawski, Billy J., Sr.; and Pavelec, John J., 4,354,409, Cl. 83-285.000.

PCUK Produits Chimiques Ugine Kuhlmann: *See*—
Schoch, Elisabeth; and Rebiffe, Michel, 4,354,948, Cl. 252-22.000.

Pearce, Henry M.: *See*—
Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., 4,355,051, Cl. 426-632.000.

Pearson, Willard C., to Ampex Corporation. Eddy current servo system for controlling the rotation of disk packs. 4,355,266, Cl. 318-85.000.

Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Oligomeric formal diols of poly(tetramethylene ether) glycol and polyurethanes prepared therefrom. 4,355,119, Cl. 521-159.000.

Pelabon, Jean, to A.N.F. Industrie. System for attachment of a tank within a container frame. 4,354,612, Cl. 220-401.000.

Pengo Industries, Inc.: *See*—
Owen, Harrold D., 4,354,433, Cl. 102-307.000.

Peoples, Charles B., to U-Haul International, Inc. Car top carrier. 4,354,625, Cl. 224-329.000.

Pepsico, Inc.: *See*—
Ariel, Gideon B., 4,354,676, Cl. 272-129.000.

Perduijn, David J.; and Verberkt, Jacobus, to U.S. Philips Corporation. Ceramic composition for a piezoelectric body and electromechanical transducer. 4,355,256, Cl. 310-358.000.

Perego, Giuseppe. Adjustable baby stroller handle rod. 4,354,689, Cl. 280-47.37R.

Perino, Didier: *See*—
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,355,235, Cl. 250-376.000.

Perkin-Elmer Corporation, The: *See*—
McNeil, Roderick J., 4,354,932, Cl. 210-198.200.

Perkins, Marion W.: *See*—
Bruton, Billy R.; Corneillie, Jerome E.; and Perkins, Marion W., 4,354,425, Cl. 92-94.000.

Perry, Marvin D., to Mid-America Body & Equipment Co. Reel locking mechanism for a reel loader apparatus. 4,354,793, Cl. 414-546.000.

Personal Products Company: *See*—
Kopolow, Steven L., 4,354,901, Cl. 162-158.000.

Peter, Oskar E. Dual counteracting hub-to-shaft clamp connection. 4,354,769, Cl. 403-248.000.

Peters, David L.: *See*—
Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,354,945, Cl. 210-736.000.

Pfeifer, Josef: *See*—
Reinehr, Dieter; and Pfeifer, Josef, 4,355,177, Cl. 564-36.000.

Pfliegel, Todor: *See*—
Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, 4,355,178, Cl. 564-44.000.

Pflugmacher, Ingo: *See*—
Rademachers, Jakob; and Pflugmacher, Ingo, 4,355,006, Cl. 423-61.000.

Phillips Cables Limited: *See*—
Beach, Shirley, 4,354,989, Cl. 264-40.600.

Phillips, John S.; and Melvin, Waymon A., Jr., to Westinghouse Electric Corp. Receiver for a distribution network power line carrier communication system. 4,355,303, Cl. 340-310.00A.

Phillips Petroleum Company: *See*—
Blackwell, Jennings P., 4,355,059, Cl. 427-388.200.
Nash, Martin E.; and Huxley, Edward E., 4,355,183, Cl. 568-19.000.
Stacy, Galen D.; and Likins, Merle R., Jr., 4,355,016, Cl. 423-450.000.
Swindell, Harold J.; and Thompson, Randall G., 4,354,957, Cl. 252-419.000.

Photomatrix Corp.: *See*—
Gensike, Karl H.; and Marsh, Robert C., 4,354,787, Cl. 414-54.000.

Picker International Limited: *See*—
Young, Ian R.; and Burl, Michael, 4,355,282, Cl. 324-309.000.

Picquet, Jean M.; Picquet, Lambert; and Cuvillier, Roger. Rearview device incorporable in helmets. 4,354,733, Cl. 350-51.000.

Picquet, Lambert: *See*—
Picquet, Jean M.; Picquet, Lambert; and Cuvillier, Roger, 4,354,733, Cl. 350-51.000.

Piepenbreier, Ernst; and Girod, Hansjochen, to Thyssen Industrie AG. Gear clutch. 4,354,850, Cl. 464-32.000.

Pierart, Robert, to Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B. Reactor unit and a nuclear installation which uses said reactor unit. 4,355,001, Cl. 376-317.000.

Pierce, Donald C. Hand-held cutter and blade holder for cutting mounting board and the like. 4,354,314, Cl. 30-293.000.

Pietschmann, Helmut: *See*—
Hoyer, Gerd; and Pietschmann, Helmut, 4,354,838, Cl. 433-101.000.

Pinkert, John R.: *See*—
Kayser, John P.; and Pinkert, John R., 4,354,493, Cl. 128-276.000.

Pitman, Herbert J.; and Harrison, Charles W., to Texaco Inc. Solvent dewaxing process. 4,354,921, Cl. 208-33.000.

Pitney Bowes Inc.: *See*—
Bujese, David P., 4,354,759, Cl. 355-3.0SH.
Kulpa, Walter J.; and Paulik, John R., 4,354,672, Cl. 271-221.000.

Pittway Corporation: *See*—
Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.

Pivovarov, Nikolai N.: *See*—
Krasnov, Mikhail M.; and Pivovarov, Nikolai N., 4,354,286, Cl. 3-13.000.

Platone, Edoardo: *See*—
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.

Plessey Overseas Limited: *See*—
Steiner, Frederick, 4,355,211, Cl. 179-90.00K.
Pliskin, William A.: *See*—
Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.
Plummer, Harvey R.; and Keller, William E., to Giddings & Lewis, Inc. Contouring and threading attachment for multi-function machine tools. 4,354,305, Cl. 29-568.000.
Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., to Brockway Glass Company, Inc. Automatic glass ware forming machine with automatic down and/or stuck bottle rejection. 4,354,865, Cl. 65-29.000.
Poffenberger, Russell E.: *See*—
Ben-David, Menashe; and Poffenberger, Russell E., 4,355,294, Cl. 340-27.00R.
Pohl, Kurt M., to L. & C. Steinmuller GmbH. Reverse osmosis desalinization utilizing plural flow work exchange vessels. 4,354,939, Cl. 210-637.000.
Pohto, Gerald R., to Diamond Shamrock Corporation. High current density electrical contact device. 4,354,916, Cl. 204-253.000.
Pokrzyk, Gerald F.: *See*—
Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., 4,354,915, Cl. 204-242.000.
Polaroid Corporation: *See*—
Grimes, Donald L.; and Haskell, Stanley W., 4,354,748, Cl. 354-23.00D.
MacLeish, William T.; and Shchori, Ehud, 4,355,091, Cl. 430-216.000.
Mader, John J., 4,355,350, Cl. 362-347.000.
McGowan, Donald A.; and Meneghini, Frank A., 4,355,169, Cl. 548-146.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,092, Cl. 430-219.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,101, Cl. 430-564.000.
Polysar Incorporated: *See*—
Stidham, Warren D., 4,354,810, Cl. 425-91.000.
Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., to United States of America, Agriculture. Direct extraction process for the production of a white defatted food-grade peanut flour. 4,355,051, Cl. 426-632.000.
Popper, Paul: *See*—
Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
Porjesz, Emma: *See*—
Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.
Portejoie, Jean-Francois; Noel, Gilbert; and Billy, Jean-Claude. Resynchronizing circuit for time division multiplex system. 4,355,387, Cl. 370-102.000.
Porter, Clyde R., to P. L. Porter Co. Control mechanism for hydraulic locking device. 4,354,398, Cl. 74-501.00R.
Porter, Sigmund N., to NCR Corporation. Circuitry for minimizing auto-correlation and bias in a random number generator. 4,355,366, Cl. 364-717.000.
Poteet, Anne P.: *See*—
Poteet, Ronald J.; and Poteet, Anne P., 4,354,845, Cl. 434-410.000.
Poteet, Ronald J.; and Poteet, Anne P. Identification structure for games and educational use and for other use. 4,354,845, Cl. 434-410.000.
Potomac Applied Mechanics, Inc.: *See*—
Stubbings, James H., 4,354,410, Cl. 83-471.300.
Pouli, Dirk: *See*—
Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., 4,354,915, Cl. 204-242.000.
Powell, Robert Y.; and Fisher, Jeff A. Hand-held automatic wire binding tool. 4,354,535, Cl. 140-93.00A.
Powers, Larry J.; and Vickers, Thomas M., to Diamond Shamrock Corporation. Controlling the curing time of alkali metal silicates using derivatives of glyoxal. 4,354,875, Cl. 106-74.000.
Pozenel, John E.: *See*—
Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., 4,355,270, Cl. 318-443.000.
PPG Industries, Inc.: *See*—
Mouly, Raymond J., 4,354,866, Cl. 65-99.500.
Presray Corporation, The: *See*—
Lumelleau, Adrian, 4,355,000, Cl. 376-205.000.
Preston, John; and Reeve, Austin J., to Imperial Chemical Industries Limited. Anti-inflammatory 1-phenylethanolamine derivatives pharmaceutical compositions thereof and processes for their manufacture. 4,355,045, Cl. 424-322.000.
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, to Anic, S.p.A. Method for synthesizing dinitriles, products obtained thereby and their derivatives. 4,354,981, Cl. 260-465.80R.
Priest, Robert V. Plasma confinement. 4,354,999, Cl. 376-142.000.
Propst, Paul L.: *See*—
Propst, Robert L.; and Propst, Paul L., 4,354,611, Cl. 220-335.000.
Propst, Robert L. System for pulpwood harvesting and delivery. 4,354,539, Cl. 144-338.000.
Propst, Robert L.; and Propst, Paul L., to Herman Miller, Inc. Top opening receptacle for trash collection and management systems. 4,354,611, Cl. 220-335.000.
Puchas, Christian, to Daimler-Benz Aktiengesellschaft. Rear axle suspension system for motor vehicles. 4,354,567, Cl. 180-73.00C.
Puckett, Dan K.: *See*—
Morgan, Allan C.; and Puckett, Dan K., 4,354,592, Cl. 198-703.000.
Pugin, Andre: *See*—
Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, 4,355,159, Cl. 542-417.000.
Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, to Radelkis Elektrokemiai Muszergyarto Szovetkezet. Molecule selective enzyme electrode. 4,354,913, Cl. 204-195.00P.
Puretic, Mario J. Sail handling apparatus. 4,354,444, Cl. 114-105.000.
Pusztaszeri, Stephen F. Method for recovery of terephthalic acid from polyester scrap. 4,355,175, Cl. 562-483.000.
Pyronnet, Patrice: *See*—
Legras, Jacques; and Pyronnet, Patrice, 4,355,215, Cl. 179-175.31R.
Quality Valve & Machine Works, Inc.: *See*—
Linder, Morris B.; and Beffano, John J., 4,354,698, Cl. 285-98.000.
Quash, Gerard, to Institut National de la Sante et de la Recherche Medicale, INSERM. Agglutination tests for detecting influenza viruses, and reagents for carrying out these tests. 4,355,102, Cl. 435-5.000.
Queen's University at Kingston: *See*—
Saunders, Gerald A. B.; and Lowe, Philip J., 4,354,691, Cl. 280-242.0WC.
Quinlan, Patrick M., to Petrolite Corporation. Clarification process with thiazine quaternary ammonium salts of polyepihalohydrin. 4,354,945, Cl. 210-736.000.
R & D Associates: *See*—
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.
R & G Mold Company, Inc.: *See*—
Schepp, Frank, 4,354,816, Cl. 425-302.100.
Rabussay, Dietmar P., to Interon, Inc. Method of dental treatment. 4,355,022, Cl. 424-50.000.
Racal-Milgo, Inc.: *See*—
Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.
Radakovich, Thomas: *See*—
Supcoe, Robert F.; and Radakovich, Thomas, 4,354,873, Cl. 106-18.320.
Radelkis Elektrokemiai Muszergyarto Szovetkezet: *See*—
Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.
Rademachers, Jakob; and Pflugmacher, Ingo, to Bayer Aktiengesellschaft. Process for the oxidative dissociation of chrome-containing ores. 4,355,006, Cl. 423-61.000.
Radici, Pierino; and Colombo, Paolo, to Societa' Italiana Resine S.I.R. S.p.A. Process for the polymerization of formaldehyde. 4,355,153, Cl. 528-243.000.
Raitto, Russell G., to Concord Laboratories. Syringe. 4,354,507, Cl. 128-763.000.
Ramstad, Jens: *See*—
Richter, Johan C. F. C.; and Ramstad, Jens, 4,354,777, Cl. 406-63.000.
Ramusino, Francesco C., to Innocenti Santeustacchio S.p.A. Arrangement for increasing the precision of a machine tool. 4,354,404, Cl. 82-2.00D.
Ramuz, Henri, to Hoffman-La Roche Inc. 2-Imino-imidazolidine derivatives. 4,355,033, Cl. 424-256.000.
Randall, D'Arcy C.: *See*—
Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.
Rasmuson, Torgny: *See*—
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
Rasmussen, Peter J.: *See*—
Delasantos, Clifford J.; and Rasmussen, Peter J., 4,354,580, Cl. 188-4.00R.
Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., to Outokumpu Oy. Process for the treatment of a raw material which contains oxide and ferrite of zinc, copper and cadmium. 4,355,005, Cl. 423-41.000.
Ratschat, Gunter, to Mannesmann DeMag A.G. Apparatus for regulating the quantities and percentages of the gaseous constituents of oxygen, nitrogen, carbon dioxide and water in reaction processes in metallurgical applications. 4,354,669, Cl. 266-140.000.
Rauschenberger, Jorg. Hinge for a chaise and the like. 4,354,710, Cl. 297-356.000.
Raychem Corporation: *See*—
Campbell, Bruce D.; and Chapman, Lynn O., 4,354,456, Cl. 118-721.000.
Grassauer, Willie K.; and Robinson, William M., 4,354,629, Cl. 228-56.000.
Raymer, Daniel P., to Rockwell International Corporation. Variable dihedral angle tail unit for supersonic aircraft. 4,354,646, Cl. 244-87.000.
RCA Corporation: *See*—
Butterwick, Gilbert N., 4,355,258, Cl. 313-95.000.
Dholakia, Anil R.; and Buiocchi, Charles J., 4,355,382, Cl. 369-71.000.
George, John B.; and Testin, William J., 4,355,415, Cl. 455-185.000.
Hang, Kenneth W.; and Anderson, Wayne M., 4,355,114, Cl. 501-5.000.
Hang, Kenneth W.; and Anderson, Wayne M., 4,355,115, Cl. 501-21.000.
Hawrylo, Frank Z.; and Olsen, Gregory H., 4,355,396, Cl. 372-46.000.
Hoover, Merle V., 4,355,287, Cl. 330-264.000.
Kaganowicz, Grzegorz; and Robinson, John W., 4,355,052, Cl. 427-39.000.

Kaplan, Leonard A., 4,355,341, Cl. 361-79.000.
Looney, Gary W., 4,354,455, Cl. 118-700.000.
Ott, Russell G., 4,355,283, Cl. 328-61.000.
Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,355,094, Cl. 430-286.000.
Reitmeier, Glenn A., 4,355,324, Cl. 358-312.000.
Sagolili, Emmanuel T.; and Hall, Glenn E., 4,354,746, Cl. 354-1.000.
Wang, Chih C.; and Bates, Ronald F., 4,355,062, Cl. 428-64.000.
Zimmerman, Harlan S.; and Rhoads, James L., 4,355,229, Cl. 250-213.0VT.

Reactor Services International, Inc.: *See*—
Easley, Othel D., Jr., 4,354,520, Cl. 137-543.230.

Reagan, Leonard D.: *See*—
Bingham, Marion G.; and Reagan, Leonard D., 4,354,513, Cl. 134-104.000.

Rebiffe, Michel: *See*—
Schoch, Elisabeth; and Rebiffe, Michel, 4,354,948, Cl. 252-22.000.

Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, to Heimann GmbH. Process for the production of gas discharge lamps. 4,354,717, Cl. 316-19.000.

Reeve, Austin J.: *See*—
Preston, John; and Reeve, Austin J., 4,355,045, Cl. 424-322.000.

Regie Nationale des Usines Renault: *See*—
Goupy, Marcel; and Roubinet, Pierre, 4,354,700, Cl. 293-132.000.

Rehn, Karl: *See*—
Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.

Reiff, Fritz: *See*—
Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.

Reiff, Thomas F.: *See*—
Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., 4,354,931, Cl. 210-136.000.

Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, to Zahnradfabrik Friedrichshafen A.G.; and Knorr-Bremse GmbH, a part interest to each. Transmission-clutch operating system. 4,354,584, Cl. 192-3.570.

Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, to ITT Industries, Inc. Dual-circuit pressure control valve for hydraulic brake systems. 4,354,712, Cl. 303-6.00C.

Reinehr, Dieter; and Pfeifer, Josef, to Ciba-Geigy Corporation. Substituted 11-amino-undeca-4,8-dienal and 11-amino-undecanal derivatives and processes for their preparation. 4,355,177, Cl. 564-36.000.

Reiner, Alberto, to D and D S.r.l. Quinuclidinic ester and derivatives of phenoxycarboxylic acids. 4,355,166, Cl. 544-268.000.

Reinhard, Donald L.: *See*—
Haaf, William R.; and Reinhard, Donald L., 4,355,126, Cl. 524-411.000.

Reinisch, Joseph: *See*—
Hummer, Roland; Reinisch, Joseph; and Thury, Wolfgang A., 4,354,869, Cl. 75-63.000.

Reiss, Howard, to Occidental Research Corporation. Method and apparatus for separating gas molecules using a bipolar membrane as a molecular sieve. 4,354,857, Cl. 55-6.000.

Reitmeier, Glenn A., to RCA Corporation. Sampled or digitized color in a high speed search record and replay system. 4,355,324, Cl. 358-312.000.

Reliable Security Systems, Inc.: *See*—
Logan, Emanuel L., 4,354,699, Cl. 292-201.000.

Remedios, Eugenio E.: *See*—
Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.

Renfrew, Edgar E.; and Zanella, Dominic A., to American Color & Chemical Corporation. Mixed anthraquinonedisulfonic acids. 4,355,012, Cl. 423-226.000.

Republic Steel Corporation: *See*—
Toth, James M.; and Judd, Tyler W., 4,355,281, Cl. 324-232.000.

Reudink, Douglas O.; and Yeh, Yu S., to Bell Telephone Laboratories, Incorporated. Technique for efficient spectrum utilization in mobile radio systems using space diversity. 4,355,411, Cl. 455-33.000.

Revitz, Martin: *See*—
Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.

Reynolds, Augustus T. Apparatus and method for maintaining positional alignment between two spaced-apart points on a moveable member. 4,354,595, Cl. 198-807.000.

Reynolds Metals Company: *See*—
Dunn, Wendell E., Jr., 4,355,008, Cl. 423-79.000.

Reynolds, Peter T.: *See*—
Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.

Reynoso, Gustavo: *See*—
Hansen, Hans J.; and Reynoso, Gustavo, 4,355,018, Cl. 424-1.000.

Rheinthal, Peter, to Sundwiger Eisenhutte Maschinenfabrik Grah & Co. Axial adjustment device for tapered intermediate rolls in a clustered mill stand. 4,354,373, Cl. 72-247.000.

Rhoads, James L.: *See*—
Zimmerman, Harlan S.; and Rhoads, James L., 4,355,229, Cl. 250-213.0VT.

Riaboy, Florence. Individual nose and mouth filters. 4,354,489, Cl. 128-206.140.

Richard, Roy V., II: *See*—
Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, 4,354,297, Cl. 17-54.000.

Richards, Bruce H.: *See*—
Richards, Carl H., III; and Richards, Bruce H., 4,354,289, Cl. 5-451.000.

Richards, Carl H., III; and Richards, Bruce H., to Richards Quality Bedding Company, Inc. Waterbed. 4,354,289, Cl. 5-451.000.

Richards Quality Bedding Company, Inc.: *See*—
Richards, Carl H., III; and Richards, Bruce H., 4,354,289, Cl. 5-451.000.

Richardson, Gerry D.; and Cairo, Joseph A., to Baxter Travenol Laboratories, Inc. Liquid level controller for a humidifier. 4,354,984, Cl. 261-66.000.

Richter, Johan C. F. C.; and Ramstad, Jens, to Kamyr, Inc. High pressure feeder deflection prevention. 4,354,777, Cl. 406-63.000.

Ricoh Co., Ltd.: *See*—
Sekigawa, Keiji, 4,355,337, Cl. 358-284.000.

Ridolfo, Anthony S., to Eli Lilly and Company. Combination therapy for rheumatoid arthritis. 4,355,029, Cl. 424-232.000.

Riedhammer, Thomas M.; and Smith, Francis X., to Bausch & Lomb Incorporated. Contact lens disinfecting and preserving solution comprising chlorhexidine and salts thereof. 4,354,952, Cl. 252-106.000.

Riege, Ulrich: *See*—
Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, 4,354,954, Cl. 252-629.000.

Riemens, Karel; and Van Thuijl, Joannes G. M., to U.S. Philips Corporation. Speech synthesizing arrangement having at least two distortion circuits. 4,355,204, Cl. 179-1.0SA.

Riera, John F.; Bielawski, Billy J., Sr.; and Pavelec, John J. Flying cutoff machine. 4,354,409, Cl. 83-285.000.

Riffault, Marie L.: *See*—
Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., 4,354,432, Cl. 102-202.700.

Riggs, Richard L.; and Coppola, Richard G., to Sangamo Weston, Inc. Data processor apparatus for multitariff meter. 4,355,361, Cl. 364-464.000.

Rines, Robert Harvey: *See*—
Knowles, Albert H., 4,354,457, Cl. 119-3.000.

Ripa, John A.: *See*—
Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., 4,354,915, Cl. 204-242.000.

Ritter, Joachim, to Industriewerk Schaeffler OHG. Overrunning clutch shiftable to free wheeling. 4,354,585, Cl. 192-45.000.

Ritzerfeld, Gerhard. Xerographic or electrostatic copying apparatus capable of copying only selected lines, paragraphs or other such sections of an original. 4,354,757, Cl. 355-7.000.

Rixon, Inc.: *See*—
Stuart, Richard L., 4,355,397, Cl. 375-17.000.

Robert Bosch GmbH: *See*—
Friese, Karl-Hermann, 4,354,912, Cl. 204-195.00S.
Geyer, Gerhard; and Kuschmierz, Heinz, 4,354,473, Cl. 123-501.000.
Hans, Waldemar, 4,354,640, Cl. 239-585.000.
Knapp, Heinrich; and Maisch, Wolfgang, 4,354,472, Cl. 123-493.000.
Straubel, Max, 4,354,476, Cl. 123-569.000.
Zirps, Wilhelm, 4,354,517, Cl. 132-110.000.

Roberts, Hugh. Double deck securing means for railroad car. 4,354,781, Cl. 410-77.000.

Roberts, William J.: *See*—
Dudley, Carl K.; and Roberts, William J., 4,354,466, Cl. 123-339.000.

Robertson, Walter W.: *See*—
Taylor, Dan G.; and Robertson, Walter W., 4,354,664, Cl. 251-282.000.

Robin, Gerard: *See*—
Bricot, Claude; and Robin, Gerard, 4,354,988, Cl. 264-22.000.

Robinson, John W.: *See*—
Kaganowicz, Grzegorz; and Robinson, John W., 4,355,052, Cl. 427-39.000.

Robinson, Ronald D. Method and apparatus for killing poultry. 4,354,296, Cl. 17-52.000.

Robinson, William M.: *See*—
Grassauer, Willie K.; and Robinson, William M., 4,354,629, Cl. 228-56.000.

Roccaforte, Harry I., to Champion International Corporation. Pyramid carton closure. 4,354,630, Cl. 229-39.00R.

Rock-Ola Manufacturing Corporation: *See*—
Bookout, Floyd V., 4,354,614, Cl. 221-67.000.

Rockwell International Corporation: *See*—
Hamilton, C. Howard, 4,354,369, Cl. 72-38.000.
Marmet, Melvin L., 4,355,247, Cl. 307-530.000.
Raymer, Daniel P., 4,354,646, Cl. 244-87.000.

Roe, David B.: *See*—
DeCosta, John; Mallos, James B.; and Roe, David B., 4,355,202, Cl. 178-18.000.

Rogers, Phillip P. Connector for ambulatory dialysis system. 4,354,490, Cl. 128-213.00A.

Rohm and Haas Company: *See*—
Manziek, Larry, 4,355,140, Cl. 525-329.400.

Rollay, David T.: *See*—
Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., 4,355,269, Cl. 318-436.000.

Rollmann, Louis D.: *See*—
Goldstein, Theodore P.; and Rollmann, Louis D., 4,354,870, Cl. 75-108.000.

Rolls-Royce Limited: *See—*
Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.

Roman, Alain: *See—*
Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.

Romer, Michael, to Merck Patent Gesellschaft mit Beschrankter Haftung. Process for the preparation of azidobenzal compounds. 4,354,976, Cl. 260-349.000.

Ronge, Georg. Process for continuous separation of polluting matter from a carrier fluid. 4,354,941, Cl. 210-706.000.

Roppatte, Michael, Jr., to Klauber, Stefan J., a part interest. Liquid applicator device with hair-parting wand. 4,354,512, Cl. 132-88.500.

Rordorf, Horst, to Berna AG Olten. Method and apparatus for the partial coating of a substrate by cathode sputtering. 4,354,910, Cl. 204-192.00R.

Rosen, Frank L.: *See—*
Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., 4,354,393, Cl. 74-5.370.

Rosenbaum, Walter S.: *See—*
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,355,371, Cl. 364-900.000.

Rosenberg, Arnold M.; and Gaidis, James M., to W. R. Grace & Co. Corrosion inhibition. 4,355,079, Cl. 428-469.000.

Rosenthal, Joel W.; and Dahlberg, Arthur J., to Chevron Research Company. Coal liquefaction process. 4,354,920, Cl. 208-10.000.

Roszinski, Hilmar; and Harnisch, Heinz, to Hoechst Aktiengesellschaft. Process for the purification of O,O-dialkylthionophosphoric acid chlorides. 4,354,983, Cl. 260-990.000.

Roubinet, Pierre: *See—*
Goupy, Marcel; and Roubinet, Pierre, 4,354,700, Cl. 293-132.000.

Rovac Corporation, The: *See—*
Shank, Wayne C.; and Edwards, Thomas C., 4,354,807, Cl. 418-13.000.

Ruck, Heinz E.: *See—*
Walters, Eugene G., Jr.; and Ruck, Heinz E., 4,354,279, Cl. 2-8.000.

Rudd, Thomas H., to Drag Specialties, Inc. Face shield and helmet. 4,354,285, Cl. 2-424.000.

Ruderman, Stephen: *See—*
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,354,789, Cl. 414-104.000.

Ruell, Hartwig, to Siemens Corporation. Liquid level indicator. 4,355,238, Cl. 250-577.000.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.

Rumsey, Robert M.; and Thornton, Robert W., to Standard Oil Company (Indiana). Twister ring and traveler. 4,354,342, Cl. 57-119.000.

Rusiniak, Richard: *See—*
Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.

Ruti Machinery Works Ltd.: *See—*
Sulser, Heinrich; and Stucki, Peter, 4,354,534, Cl. 139-435.000.

Rutkowski, Edward V., Jr.: *See—*
Buchanan, James C.; and Rutkowski, Edward V., Jr., 4,354,765, Cl. 400-7.000.

Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., to International Standard Electric Corporation. Digital signalling system. 4,355,405, Cl. 375-48.000.

Rynski, Michael J.: *See—*
Boguslawski, George; and Rynski, Michael J., 4,355,103, Cl. 435-34.000.

S. C. Johnson & Son, Inc.: *See—*
Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., 4,355,021, Cl. 424-28.000.
Sutton, David C., 4,354,871, Cl. 106-3.000.

Saam, John C.; and Chou, Yungnien J., to Dow Corning Corporation. Method for preparing condensation polymers by emulsion polymerization. 4,355,154, Cl. 528-274.000.

Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., to Honeywell Inc. Lithium thionyl chloride battery. 4,355,086, Cl. 429-105.000.

SAB Industri AB: *See—*
Severinsson, Lars M., 4,354,582, Cl. 188-196.00M.

Sabon, Robert J., to GTE Automatic Electric Labs Inc. Programmable line circuit. 4,355,209, Cl. 179-18.0FA.

Sachs-Systemtechnik GmbH: *See—*
Tellert, Rudy, 4,355,243, Cl. 307-261.000.

Sack GmbH: *See—*
Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.

Saegusa, Noboru: *See—*
Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.

Saeman, Walter C., to Olin Corporation. Process for production of layered glass batch pellets. 4,354,864, Cl. 65-27.000.

Safadago, Gary J. Therapeutic apparatus for use in treatment of muscular and skeletal disorders. 4,354,485, Cl. 128-70.000.

Sagane, Sigeru: *See—*
Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.

Sagolili, Emmanuel T.; and Hall, Glenn E., to RCA Corporation. Unitary light shield for use in color picture tube lighthouses. 4,354,746, Cl. 354-1.000.

Sahli, Max: *See—*
Boegel, Gerhard; and Sahli, Max, 4,354,403, Cl. 81-57.370.

Saikkonen, Pekka J.: *See—*
Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.

Saito, Gunji: *See—*
Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.

Saito, Shizuo: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

Saito, Tetsuo: *See—*
Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, 4,354,693, Cl. 280-714.000.

SAK Industries (1980) Ltd.: *See—*
Aho, Sakari, 4,354,325, Cl. 43-105.000.

Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, to Naganokeiki Seisakujo Company, Ltd. Intracranial pressure gauge. 4,354,506, Cl. 128-748.000.

Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, to Hitachi, Ltd. Semiconductor memory device. 4,355,374, Cl. 365-149.000.

Sakamoto, Fukuma: *See—*
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.

Sakamoto, Masahiro: *See—*
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.

Sakamoto, Yoshihiro: *See—*
Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, 4,354,997, Cl. 264-560.000.

Sakashita, Akio: *See—*
Nakamura, Takashi; and Sakashita, Akio, 4,355,325, Cl. 358-29.000.

Sakitani, Yoshio: *See—*
Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, 4,355,232, Cl. 250-310.000.

Sakuranaka, Toru: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.

Salerno, Giuseppe: *See—*
Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.

Salkazanov, Pierre: *See—*
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,355,356, Cl. 364-200.000.

Salter, Stuart R.; and Smith, David R., to British Telecommunications. Injection lasers. 4,355,395, Cl. 372-38.000.

Sama, Stephen L.; and Kitchener, William R., to Artek Systems Corporation. Image analyzer with light pen or the like and shading corrector. 4,355,228, Cl. 235-92.0PC.

Samuelsson, Kjell A.: *See—*
Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.

Sanders Associates, Inc.: *See—*
Thompson, Thomas W., 4,354,662, Cl. 251-129.000.

Sangamo Weston, Inc.: *See—*
Riggs, Richard L.; and Coppola, Richard G., 4,355,361, Cl. 364-464.000.

Sankei Giken Kogyo Kabushiki Kaisha: *See—*
Tabata, Kazuki; and Honma, Hideaki, 4,354,573, Cl. 181-239.000.

Sankyo Company, Limited: *See—*
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust gas discharge and cooling means for outboard engines. 4,354,849, Cl. 440-88.000.

Sanraku-Ocean Co., Ltd.: *See—*
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.

Sansbury, Ralph. Electromagnetic solar cell. 4,355,195, Cl. 136-254.000.

Sansha Electric Mfg. Co., Ltd.: *See—*
Shinkawa, Tsutomu; and Tokuda, Hiroaki, 4,354,831, Cl. 432-263.000.

Santoni, Pierre J. Articulator devices for reproducing the movements of the mandible. 4,354,836, Cl. 433-73.000.

Sasagaki, Nobuaki: *See—*
Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.

Sasaki, Noriaki: *See—*
Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.

Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, to Tokyo Shibaura Electric Co., Ltd. Microprogrammed information processing system having self-checking function. 4,355,389, Cl. 371-18.000.

Sato, Ichitaro, to Sony Corporation. Video signal processing circuit with comb filter. 4,355,333, Cl. 358-160.000.

Sato, Koji: *See—*
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.

Sato, Ryosuke: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

Sato, Toshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection apparatus in motorized two-wheeled vehicle. 4,354,469, Cl. 123-460.000.

Sato, Tsutomu, to Sony Corporation. Phase locked loop circuit. 4,355,413, Cl. 455-183.000.

Sato, Yoichi: *See*—
Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, 4,354,422, Cl. 91-358.00R.

Sato, Yoshimi, to Nissan Motor Company, Limited. Seat belt system. 4,354,695, Cl. 280-804.000.

Sato, Yoshinori: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Satoh, Nobuo, to Fuji Jukogyo Kabushiki Kaisha. Passive safety belt device. 4,354,694, Cl. 280-802.000.

Satoh, Tomoyoshi, to Nihon Yohhin Kabushiki Kaisha. Structural member for sleeping bag. 4,354,281, Cl. 2-69.500.

Satronic AG: *See*—
Ludi, Roger; and Hinni, Bernhard, 4,355,292, Cl. 335-145.000.

Saunders, Gerald A. B.; and Lowe, Philip J., to Queen's University at Kingston. Wheel chair propulsion system. 4,354,691, Cl. 280-242.0WC.

Sawaki, Mikio: *See*—
Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, 4,355,184, Cl. 568-31.000.

Scalzi, Casper A.: *See*—
Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.

Scanlon, Robert T.; and Gelber, Robert M., to Optical Coating Laboratory, Inc. Color absorption-type filter and method of making. 4,354,739, Cl. 350-311.000.

Scarrott, Gordon G., to International Computers Limited. System for extracting timing information from a digital waveform. 4,355,408, Cl. 375-110.000.

Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, to Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek. Manufacture of semi-hard cheese by ultrafiltration. 4,355,048, Cl. 426-40.000.

Schaefer, Fritz P.; and Jasny, Jan, to Max Planck Gesellschaft Zur Foerderung der Wissenschaften E.V. Laser device for generating ultrashort laser radiation pulses. 4,355,394, Cl. 372-16.000.

Schaeffer-Homberg GmbH: *See*—
Wolfertz, Gunter, 4,354,588, Cl. 198-394.000.

Scheffler, Knut: *See*—
Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, 4,354,954, Cl. 252-629.000.

Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., to Gates Learjet Corporation. Airstream modification device for airfoils. 4,354,648, Cl. 244-199.000.

Schepp, Frank, to R & G Mold Company, Inc. Thermoforming apparatus. 4,354,816, Cl. 425-302.100.

Schering, Aktiengesellschaft: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,355,039, Cl. 424-273.00R.

Schering Corporation: *See*—
Villani, Frank J., 4,355,036, Cl. 424-267.000.

Schewe, Richard A., to Barber-Colman Company. Package support apparatus for forming a creeling tail. 4,354,642, Cl. 242-18.0PW.

Schiff, Norman: *See*—
Oczkowski, Boguslaw; and Schiff, Norman, 4,354,487, Cl. 128-156.000.

Schiffner, Gerhard, to Siemens Aktiengesellschaft. Ring interferometer comprising a single-mode light waveguide. 4,354,760, Cl. 356-350.000.

Schillinger, Joseph F., to Champion International Corporation. Article display package and blank therefor. 4,354,598, Cl. 206-462.000.

Schlumberger Technology Corporation: *See*—
Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.
Chan, David S. K., 4,355,357, Cl. 364-422.000.

Schmalz, Richard J.: *See*—
Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.

Schmeykal, Rudolf: *See*—
Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.

Schmidt, Alfred. Snow plow for railed vehicle. 4,354,320, Cl. 37-213.000.

Schmidt, Peter; and Muhlberger, Emil, to International Standard Electric Corporation. Method of and apparatus for transporting articles. 4,354,703, Cl. 294-64.00R.

Schmidt, Walter: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.

Schmitt, Frederick L.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.

Schoch, Elisabeth; and Rebiffe, Michel, to PCUK Produits Chimiques Ugine Kuhlmann. Lubricating varnishes having a graphite fluoride base and method of preparing same. 4,354,948, Cl. 252-22.000.

Schonowsky, Hubert: *See*—
Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, 4,355,189, Cl. 568-637.000.

Schoonmaker, Charles D.: *See*—
Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.

Schopper, Bernd: *See*—
Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.

Schorfheide, James J., to Exxon Research and Engineering Co. Catalytic reforming process. 4,354,925, Cl. 208-140.000.

Schrei, Werner: *See*—
Hellwig, Friedrich-Wilhelm; and Schrei, Werner, 4,355,390, Cl. 371-21.000.

Schroeder, Herbert A. Method of beneficiating wood. 4,354,316, Cl. 34-13.800.

Schulte, Rolf: *See*—
Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.

Schumacher, Ernest W.; and Evans, Stephen E., to Virginia Chemicals, Inc. Integral suction line accumulator/filter-drier. 4,354,362, Cl. 62-474.000.

Schummer, Helmut: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.

Schundehutte, Karl-Heinz: *See*—
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.

Schuss, Werner. Dental handpiece. 4,354,839, Cl. 433-126.000.

Schuster, Wilhelm. Flexible elastic support. 4,354,709, Cl. 297-284.000.

Schutten, Herman P.: *See*—
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,355,322, Cl. 357-38.000.

Schwaier, Anita: *See*—
Lorenz, Peter; and Schwaier, Anita, 4,355,019, Cl. 424-9.000.

Schwartz, Albert B.: *See*—
Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.

Schwartz, Wesley W., to Square D Company. Flat-cornered triangular medical column. 4,354,330, Cl. 52-28.000.

Schwarz, Francisc C. High repetition rate power pulse generator. 4,355,351, Cl. 363-9.000.

Schwendemann, Volker; and Mangold, Dietrich, to BASF Aktiengesellschaft. Preparation of aliphatic isocyanates. 4,354,979, Cl. 260-453.00P.

Scordato, Richard E.: *See*—
Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.

Scott Bader Company Limited: *See*—
Knightley, Jack A., 4,355,073, Cl. 428-350.000.

Scott, John W. Volumetric apparatus with improved drive system. 4,354,402, Cl. 74-822.000.

Scott, Paul D.: *See*—
Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.

Seaquist Valve Co., Div. of Pittway Corp.: *See*—
Knickerbocker, Michael G., 4,354,621, Cl. 222-47.000.

SEB S.A.: *See*—
Berard, Jean-Claude, 4,355,227, Cl. 219-390.000.

Seely, Warren L., to Vari-L Company, Inc. Broadband mixer with coplanar balun. 4,355,421, Cl. 455-327.000.

Seikosha Co., Ltd.: *See*—
Fujita, Masanori; and Owa, Yoshihito, 4,355,381, Cl. 368-187.000.

Sekigawa, Keiji, to Ricoh Co., Ltd. Method of restoring pictures with high density. 4,355,337, Cl. 358-284.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.

Septier, Louis: *See*—
Demange, Michel; and Septier, Louis, 4,354,868, Cl. 75-60.000.

Sethares, James C.: *See*—
Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., 4,355,278, Cl. 324-158.00R.

Severinsson, Lars M., to SAB Industri AB. Device at a slack adjuster. 4,354,582, Cl. 188-196.00M.

Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., to Brown & Williamson Tobacco Corporation. Carton collating and transfer apparatus. 4,354,591, Cl. 198-451.000.

Sexstone, John H.: *See*—
Lewis, Robert T.; and Sexstone, John H., 4,354,894, Cl. 156-517.000.

Sexton, James H.: *See*—
Medlin, William L.; Masse, Lucien; and Sexton, James H., 4,354,381, Cl. 73-151.000.

Seys, Freddy: *See*—
Heckel, Emil; Seys, Freddy; Baeckelmans, Rene; and Heilmann, Wolfgang, 4,355,015, Cl. 423-336.000.

SFS Stadler AG: *See*—
Boegel, Gerhard; and Sahli, Max, 4,354,403, Cl. 81-57.370.

Sgaslik, Friedrich, to Andre Buechl Kalk-und Portandzementwerk. Filter for cleaning gases. 4,354,862, Cl. 55-296.000.

SGS-ATES Componenti Elettronici S.p.A.: *See*—
Felici, Maurizio; and Menniti, Pietro, 4,355,344, Cl. 361-103.000.

Shah, Suresh R.: *See*—
Khungar, Sohan L.; and Shah, Suresh R., 4,355,142, Cl. 526-88.000.

Shakespeare Company: *See*—
Zeigler, Myron C., 4,355,061, Cl. 428-36.000.

Shank, Wayne C.; and Edwards, Thomas C., to Rovac Corporation, The. Compressor-expander of the vane type having canted vane cavity. 4,354,807, Cl. 418-13.000.

Sharp Kabushiki Kaisha: *See*—
Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.
Tatsuoka, Masao; and Fujimura, Katsunori, 4,354,358, Cl. 62-271.000.
Yanagiuchi, Shigenobu, 4,355,370, Cl. 364-900.000.

Shatto, Walter C., Jr.: *See*—
Brandewie, Joseph E.; and Shatto, Walter C., Jr., 4,354,626, Cl. 226-109.000.

Shchori, Ehud: *See*—
MacLeish, William T.; and Shchori, Ehud, 4,355,091, Cl. 430-216.000.

Shell Oil Company: *See*—
Bickham, Kenneth L., 4,354,778, Cl. 406-137.000.
Eggers, Carl A.; and Galvin, Gerald D., 4,354,949, Cl. 252-39.000.
Ten Haken, Pieter; and Webb, Shirley B., 4,355,035, Cl. 424-263.000.

Shelton, William S.: *See*—
Hochmuth, William R.; and Shelton, William S., 4,354,523, Cl. 137-614.180.

Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., to Merck & Co., Inc. Ethenyl derivatives of mercaptoalkylpyridines as anti-inflammatory agents. 4,355,034, Cl. 424-263.000.

Shepard, Joseph F.: *See*—
Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.

Sherwood, John W. C., to Chevron Research Company. Continuous automatic migration of seismic data with waveform preservation. 4,355,379, Cl. 367-68.000.

Sherwood Medical Industries Inc.: *See*—
Bodicky, Raymond O., 4,354,495, Cl. 128-348.000.

Shibata, Shinya: *See*—
Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.

Shibuya, Iwao: *See*—
Inoue, Kiyoshi; and Shibuya, Iwao, 4,355,223, Cl. 219-69.00M.

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, to Sumitomo Chemical Company Limited. Process for producing a propylene-ethylene copolymer having improved stretchability. 4,355,144, Cl. 526-137.000.

Shiga, Kazumasa, to Matsushita Electric Industrial Company, Limited. Method of and apparatus for testing and indicating relaxation state of a human subject. 4,354,505, Cl. 128-732.000.

Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., to Mobil Oil Corporation. Method of removing contaminants from hydrocarbonaceous fluids using high-sodium alumina. 4,354,927, Cl. 208-251.00H.

Shiino, Kouji: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Shima Idea Center Co., Ltd.: *See*—
Inoue, Hideo, 4,354,363, Cl. 66-128.000.

Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, to Teijin Limited. Aromatic copolyamide containing 3,4'-diamino diphenylene moiety. 4,355,151, Cl. 528-183.000.

Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, to Kuraray Co., Ltd.; and Taoayuki Matsuo. Method for manufacture of a selective chemical sensitive FET transducer. 4,354,308, Cl. 29-571.000.

Shimano Industrial Company Limited: *See*—
Katayama, Hitoshi, 4,354,399, Cl. 74-551.100.

Shimizu, Masaki; and Nomura, Takeo, to Terumo Corporation. Microorganism culturing device. 4,355,111, Cl. 435-243.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.

Shinbo, Katsutoshi: *See*—
Hosokawa, Takanori; Maki, Hideo; and Shinbo, Katsutoshi, 4,355,002, Cl. 376-419.000.

Shindo, Minoru: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Shinkawa, Tsutomu; and Tokuda, Hiroaki, to Sansha Electric Mfg. Co., Ltd. Crucible for precision casting device. 4,354,831, Cl. 432-263.000.

Shinohara, Nobuhiro: *See*—
Suzuki, Keiichiro; Ono, Takuro; and Shinohara, Nobuhiro, 4,354,991, Cl. 264-65.000.

Shinozaki, Teizo: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Shiotu, Gisaburo: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Shiozawa, Kouji: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.

Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, to Fuji Photo Film Co., Ltd. Process for the production of magnetic recording members. 4,354,908, Cl. 204-192.00N.

Shiratori, Mamoru: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Shirono, Junkichi; and Honda, Katsuhisa, to Anritsu Electric Company Limited. Stand for supporting items of electronic equipment. 4,354,436, Cl. 108-123.000.

Shoemaker, Lewis E.: *See*—
Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., 4,355,224, Cl. 219-137.0WM.

Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., to Harvey Hubbell Incorporated. Cable grips. 4,354,705, Cl. 294-86.0CG.

Shoup, Stephen G., to Caterpillar Tractor Co. Heavy duty drawbar. 4,354,692, Cl. 280-495.000.

Shuren, Thomas E.: *See*—
Desai, Mahendrakumar D.; and Shuren, Thomas E., 4,354,613, Cl. 221-4.000.

Siemens Aktiengesellschaft: *See*—
Binz, Reiner; and Karl, Otto, 4,355,386, Cl. 370-100.000.
Blossfeldt, Dieter, 4,355,308, Cl. 340-781.000.
Diepers, Heinrich; and Niewisch, Joachim, 4,354,388, Cl. 73-612.000.
Doemer, Josef; and Thanhaeuser, Gerhard, 4,355,400, Cl. 375-4.000.
Hellwig, Friedrich-Wilhelm; and Schrei, Werner, 4,355,390, Cl. 371-21.000.
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
Mueller, Friedrich, 4,355,407, Cl. 375-91.000.
Schiffner, Gerhard, 4,354,760, Cl. 356-350.000.
Strahwald, Franz; and Szehi, Erich, 4,354,509, Cl. 128-803.000.
Tihanyi, Jeno, 4,355,320, Cl. 357-30.000.
Weigert, Kurt; and Hudek, Karl, deceased, 4,354,498, Cl. 128-419.00R.

Siemens Corporation: *See*—
Ruell, Hartwig, 4,355,238, Cl. 250-577.000.

SIG Schweizerische Industrie-Gesellschaft: *See*—
Fluck, Rene, 4,354,589, Cl. 198-419.000.

Sills, Roger J. M.: *See*—
Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.

Silver, Theodore R., to White Consolidated Industries, Inc. Rotary wall deslagger. 4,354,294, Cl. 15-317.000.

Simmons, John J.: *See*—
Kaczur, Jerry J.; Tyler, James C., Jr.; and Simmons, John J., 4,354,942, Cl. 210-712.000.

Simon, Hans. Cable grommet with tension relief. 4,354,651, Cl. 248-56.000.

Simon-Hartley Limited: *See*—
Austin, Eric P.; and Worrall, Howard J., 4,354,935, Cl. 210-396.000.

Simons, Ronald H.; and Wilkinson, Basil S. Lighting unit. 4,355,349, Cl. 362-153.000.

Sims, J. Robert, to Exxon Research & Engineering Co. Energy recovery reciprocating engine. 4,354,421, Cl. 91-39.000.

Singer Company, The: *See*—
Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., 4,354,393, Cl. 74-5.370.
Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.
Forehand, Frederic N.; and Mecklenborg, Richard A., 4,354,738, Cl. 350-126.000.
Herr, John A.; and Jaffe, Wolfgang, 4,355,255, Cl. 310-254.000.
Horey, Leonard I., 4,354,442, Cl. 112-158.00E.
Jarmy, Howard I., 4,354,724, Cl. 339-186.00R.
Theall, C. Earle, 4,355,423, Cl. 455-608.000.

Sinha, Brajnandan; and Tiberg, Sven-Erik, to Sinha, Brajnandan. Device for indicating air pressure in vehicle tires. 4,355,297, Cl. 340-58.000.

Sitton, Oliver C.: *See*—
Gaddy, James L.; and Sitton, Oliver C., 4,355,108, Cl. 435-165.000.

Skandinanisk Tobakskompagni A/S: *See*—
Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.

Skuttle Mfg. Co.: *See*—
Johnson, Thomas, 4,354,985, Cl. 261-100.000.

Slaughter, Edward R., to United Technologies Corporation. Formation of alloy powders through solid particle quenching. 4,355,057, Cl. 427-216.000.

Slyman Manufacturing Corporation: *See*—
Buehl, Arnold L.; and Zwipf, Werner H., 4,354,823, Cl. 431-328.000.

Smeltzer, Richard H.; and Cello, Linda M., to International Paper Company. Tissue culture method for asexual propagation of pine trees and medium for use therewith. 4,354,327, Cl. 47-58.000.

Smith, David R.: *See*—
Salter, Stuart R.; and Smith, David R., 4,355,395, Cl. 372-38.000.

Smith, Donald P. Induced circulation oven or cooler. 4,354,549, Cl. 165-62.000.

Smith, Francis X.: *See*—
Riedhammer, Thomas M.; and Smith, Francis X., 4,354,952, Cl. 252-106.000.
Smith, Marvin W.: *See*—
Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.
Smith, Stephen D.: *See*—
Stupar, James A.; and Smith, Stephen D., 4,354,660, Cl. 251-4.000.
Smith, William J., to Weatherly Foundry & Manufacturing Co. Apparatus for removing no-bake coatings from foundry sand and classifying the reclaimed sand. 4,354,641, Cl. 241-40.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Radici, Pierino; and Colombo, Paolo, 4,355,153, Cl. 528-243.000.
Societa Italiana Telecomunicazioni Siemens S.P.A.: *See*—
Cottatellucci, Ezio, 4,355,288, Cl. 331-12.000.
Societa per Azioni Technogas Fabbrica Apparecchiature Termo-Elettrodomestiche di Giorgio e Gianni F. llt Contini: *See*—
Contini, Giorgio, 4,354,478, Cl. 126-39.00E.
Societa Pneumatici Pirelli S.p.A.: *See*—
Tarantola, Luciano; and Migliarini, Cesare, 4,354,892, Cl. 156-398.000.
Societe Anonyme de Telecommunications: *See*—
Israel, Renato G.; Lavoisard, Jean-Louis; and Marchand, Jean-Claude, deceased, 4,355,206, Cl. 179-18.0HB.
Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B.: *See*—
Pierart, Robert, 4,355,001, Cl. 376-317.000.
Societe Chimique des Charbonnages SA: *See*—
Meyer, Nicolas; and Cousin, Michel, 4,355,145, Cl. 526-195.000.
Societe d'Assistance Technique Pour Produits Nestle, S.A.: *See*—
Akesson, Ingve R., 4,354,428, Cl. 99-639.000.
Societe Francaise d'Electrometallurgie-SOFREM: *See*—
Demange, Michel; and Septier, Louis, 4,354,868, Cl. 75-60.000.
Societe J. Brochier & Fils.: *See*—
Bompard, Bruno; and Bruyere, Alain, 4,354,888, Cl. 156-175.000.
Societe Lignes Telegraphiques et Telephoniques: *See*—
Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.
Societe Nationale Industrielle Aerospatiale: *See*—
Hubert, Bernard, 4,355,313, Cl. 343-725.000.
Soeda, Koichi: *See*—
Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, 4,354,877, Cl. 106-90.000.
SOHIO: *See*—
Isley, Ralph E., 4,355,127, Cl. 524-423.000.
Solar 77 S.p.A.: *See*—
Cantoni, Angelo, 4,354,762, Cl. 366-160.000.
Solartron Electronic Group Limited, The: *See*—
Stansfeld, James W., 4,354,377, Cl. 73-32.00A.
Solomon, Frank, to Diamond Shamrock Corporation. Gas electrode with asymmetric current distributor. 4,354,917, Cl. 204-284.000.
Solomon, Frank, to Diamond Shamrock Corporation. Fibrillated matrix active layer for an electrode. 4,354,958, Cl. 252-425.300.
Sone, Kohki; and Kenji, Okamura, to Nissan Motor Company, Limited. System for feedback control of air/fuel ratio in IC engine with subsystem to control current supply to oxygen sensor. 4,354,468, Cl. 123-440.000.
Sonnabend, Werner, to Matth. Hohner AG. Phase-modulating system for electronic musical instruments. 4,354,415, Cl. 84-1.240.
Sonnenberg, Heinz: *See*—
Surkamp, Paul; and Sonnenberg, Heinz, 4,354,531, Cl. 139-66.00R.
Sony Corporation: *See*—
Doi, Toshitada; and Iga, Akira, 4,355,392, Cl. 371-45.000.
Nagumo, Fumio; and Asaida, Takashi, 4,355,327, Cl. 358-44.000.
Nakamura, Takashi; and Sakashita, Akio, 4,355,325, Cl. 358-29.000.
Sato, Ichitaro, 4,355,333, Cl. 358-160.000.
Sato, Tsutomu, 4,355,413, Cl. 455-183.000.
Sorathia, Usman A. K.: *See*—
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,355,120, Cl. 521-189.000.
Soulliard, Charles, to Midian Electronics, Inc. Sub-miniature tone encoder with automatic number identification. 4,355,210, Cl. 179-84.0VF.
South Wales Switchgear Limited: *See*—
Parry, John, 4,355,219, Cl. 200-147.00R.
Parry, John, 4,355,220, Cl. 200-147.00R.
Southwire Company: *See*—
Adams, Ronald D.; and Chia, E. Henry, 4,354,880, Cl. 148-2.000.
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
Stewart, Maxson L., 4,355,009, Cl. 423-101.000.
Soutsos, Michael D.; and Callanan, Robert F. Pipe thread protector. 4,354,529, Cl. 138-96.00T.
Sp. El. s.r.l.: *See*—
Franzolini, Luciano, 4,355,342, Cl. 361-91.000.
Spadaro, James J.: *See*—
Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., 4,355,051, Cl. 426-632.000.
Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., to Frederick Electronics Corporation. Teletypewriter line keyer with switching current regulator. 4,355,403, Cl. 375-36.000.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V. Integrated gate turn-off device having a vertical power transistor forming a regenerative loop with a lateral transistor. 4,355,322, Cl. 357-38.000.
Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., to General Foods Corporation. Flavoring with 2-(α-mercaptoalkyl)-3-thiazoline. 4,355,049, Cl. 426-535.000.
Sperry Corporation: *See*—
Horiuchi, George H., 4,354,430, Cl. 100-192.000.
Spitler, Blaine W. Apparatus for stacking containers on a pallet. 4,354,786, Cl. 414-46.000.
Sprick, Ellis H. Multi-fuel carburetor with rotary mixing valve. 4,354,477, Cl. 123-575.000.
Spuhl AG: *See*—
Wirz, Jakob, 4,354,819, Cl. 425-409.000.
Square D Company: *See*—
Schwartz, Wesley W., 4,354,330, Cl. 52-28.000.
Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., to Hooker Chemicals & Plastics Corp. Low overvoltage hydrogen cathodes. 4,354,915, Cl. 204-242.000.
Stacy, Galen D.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Feed forward carbon black reactor control. 4,355,016, Cl. 423-450.000.
Staley, Raymond J. Method of disc brake repair. 4,354,303, Cl. 29-402.080.
Standard Oil Company, The: *See*—
Yanik, Richard W.; and Herold, Albert J., 4,355,157, Cl. 528-499.000.
Standard Oil Company (Indiana): *See*—
Dobry, Alan M., 4,354,943, Cl. 210-727.000.
Dobry, Alan M., 4,354,944, Cl. 210-727.000.
Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.
Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.
Rumsey, Robert M.; and Thornton, Robert W., 4,354,342, Cl. 57-119.000.
Standley, Paul M., to Dayco Corporation. Flexible load-carrying cord, apparatus and polymeric construction utilizing same. 4,355,069, Cl. 428-292.000.
Stanley, Michael G., to Automotive Products Limited. Friction clutch driven plate. 4,354,586, Cl. 192-106.200.
Stansfeld, James W., to Solartron Electronic Group Limited, The. Fluid density transducer. 4,354,377, Cl. 73-32.00A.
Starp, Franz. Photographic camera. 4,354,752, Cl. 354-232.000.
Starp, Franz: *See*—
Tenne, Lave; Starp, Franz; and Holzapfel, Walter, 4,354,753, Cl. 354-232.000.
Stauffer Chemical Company: *See*—
Epstein, Ronald A.; and Mink, Robert I., 4,354,959, Cl. 252-429.00B.
Teach, Eugene G., 4,354,867, Cl. 71-88.000.
Steidle, Werner, to Karl Schmidt GmbH. Expansion-controlled light alloy piston. 4,354,426, Cl. 92-235.000.
Steiner, Frederick, to Plessey Overseas Limited. Push button key modules. 4,355,211, Cl. 179-90.00K.
Steiner, Hakan: *See*—
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
Steinle, Benedikt: *See*—
Lechner, Hubert; and Steinle, Benedikt, 4,355,252, Cl. 310-162.000.
Steinmetz, Richard D. Game bag. 4,354,679, Cl. 273-58.00A.
Stemmler, Hermann; and Knittel, Volker, to Hoechst Aktiengesellschaft. Bonding sheet-like material to a substrate from which it can be dry-stripped. 4,355,074, Cl. 428-350.000.
Stephan, Hans-Werner: *See*—
Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.
Stevenson, Mayne B., to Arvey Corporation. Resealable envelope. 4,354,631, Cl. 229-71.000.
Stewart, Maxson L., to Southwire Company. Separative treatment of zinc-bearing flue dust. 4,355,009, Cl. 423-101.000.
Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek: *See*—
Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, 4,355,048, Cl. 426-40.000.
Stidham, Warren D., to Polysar Incorporated. Apparatus for distributing a foamed composition on a substrate. 4,354,810, Cl. 425-91.000.
Stirling, Irene, to Beecham Group Limited. Clavudienes. 4,354,974, Cl. 260-245.300.
Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, to Baldwin, Stoddard & Co. System for utilizing interactive blocks to teach arithmetic. 4,354,842, Cl. 434-195.000.
Storm, Dick E. A.: *See*—
Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, to Gould Inc. Optical transducer. 4,354,735, Cl. 350-96.290.
Strahwald, Franz; and Szehi, Erich, to Siemens Aktiengesellschaft. Apparatus for application of an electrode system on a patient's body. 4,354,509, Cl. 128-803.000.
Strait, Carl. Violin bridge for a stringed instrument. 4,354,416, Cl. 84-309.000.
Straubel, Max, to Robert Bosch GmbH. Apparatus for controlling the recirculated exhaust gas quantities and the injection quantity in auto-igniting internal combustion engines. 4,354,476, Cl. 123-569.000.

Strijbos, Sytse: *See*—
Kools, Franciscus X. N. M.; and Strijbos, Sytse, 4,354,993, Cl. 264-86.000.

Stroucken, Klaus H. D., to Alfa-Laval AB. Operating system for centrifuges. 4,354,632, Cl. 233-20.00A.

Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals. 3-(4-Piperidyl)-1,2-benzisoxales. 4,355,037, Cl. 424-267.000.

Stuart, Richard L., to Rixon, Inc. Full duplex communication system for voice grade channels. 4,355,397, Cl. 375-17.000.

Stubbings, James H., to Potomac Applied Mechanics, Inc. Straight line insulation cutter assembly. 4,354,410, Cl. 83-471.300.

Stucki, Peter: *See*—
Sulser, Heinrich; and Stucki, Peter, 4,354,534, Cl. 139-435.000.

Studiengesellschaft Kohle m.b.H.: *See*—
Bogdanovic, Borislav, 4,354,982, Cl. 260-665.00R.

Stull, Herbert C.: *See*—
Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., 4,354,725, Cl. 339-214.00R.

Stupar, James A.; and Smith, Stephen D., to Baxter Travenol Laboratories Inc. In-line flow control clamp. 4,354,660, Cl. 251-4.000.

Stutz, Andreas: *See*—
Luchinger, Paul; and Stutz, Andreas, 4,354,563, Cl. 177-212.000.

Sud, Rahul; Hardee, Kim C.; and Heightley, John D., to INMOS Corporation. Asynchronously equillibrated and pre-charged static ram. 4,355,377, Cl. 365-203.000.

Sudia, Theodore W.: *See*—
Hoke, John L.; and Sudia, Theodore W., 4,354,352, Cl. 60-517.000.

Suess, Hans R. Dermatologic and cosmetic ointment base. 4,355,046, Cl. 424-355.000.

Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Internal combustion engine. 4,354,471, Cl. 123-481.000.

Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,355,100, Cl. 430-544.000.

Sugiura, Hiroyuki, to Diesel Kiki Co., Ltd. Discharge air temperature control device having reference temperature control function for air conditioning system for automotive vehicles. 4,354,547, Cl. 165-25.000.

Sugiyama, Yoshio: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o. Sodium alumoglucoheptonate, a process for its preparation and its use as sequestering agent. 4,354,940, Cl. 210-698.000.

Sullins, James R., to X-Ray Manufacturing & Supply, Inc. Industrial X-ray machine. 4,355,410, Cl. 378-199.000.

Sulser, Heinrich; and Stucki, Peter, to Ruti Machinery Works Ltd. Reed for jet looms. 4,354,534, Cl. 139-435.000.

Sulzer Brothers Ltd.: *See*—
Koch, Bernhard R.; and Vogelbacher, Erich, 4,354,530, Cl. 139-54.000.

Sumitomo Chemical Company Limited: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.

Sumitomo Electric Industries, Ltd.: *See*—
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.
Mano, Hiroshi; and Kawauchi, Satsuki, 4,354,741, Cl. 350-357.000.

Summers, James B.: *See*—
Beyer, James B.; and Summers, James B., 4,355,289, Cl. 332-17.000.

Sunami, Hideo: *See*—
Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.

Suncor Inc.: *See*—
Lauer, James L.; and Lau, Keyser K., 4,355,231, Cl. 250-253.000.

Sundberg, Jack G., to Chandler Evans Inc. Fixed displacement vane pump with undervane pumping. 4,354,809, Cl. 418-268.000.

Sundheimer, Craig S.; and Joslin, Bradley D., to American Sterilizer Company. Apparatus for cleaning and drying anesthesia and respiratory equipment. 4,354,514, Cl. 134-152.000.

Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See*—
Rheinthal, Peter, 4,354,373, Cl. 72-247.000.

Supcoe, Robert F.; and Radakovich, Thomas, to United States of America, Navy. Underwater antifoulant composition. 4,354,873, Cl. 106-18.320.

Surkamp, Paul; and Sonnenberg, Heinz, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Rotation dobby. 4,354,531, Cl. 139-66.00R.

Sutherland, Rabion C. Drain pipe flushing apparatus. 4,354,515, Cl. 134-167.00C.

Sutton, David C., to S. C. Johnson & Son, Inc. Cleaner-polish compositions. 4,354,871, Cl. 106-3.000.

Sutton, Leroy: *See*—
Fitzgibbon, James J.; and Sutton, Leroy, 4,355,334, Cl. 358-168.000.

Suzuki, Hajime; and Arakawa, Hiroshi, to Kabushiki Toyoda Jidoshokki Seisakusho. Auxiliary nozzle for jet looms. 4,354,533, Cl. 139-435.000.

Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Accompaniment tone generator for electronic musical instrument. 4,354,413, Cl. 84-1.010.

Suzuki, Keiichiro; Ono, Takuro; and Shinohara, Nobuhiro, to Asahi Glass Company, Ltd. Dense sintered silicon carbide ceramic. 4,354,991, Cl. 264-65.000.

Suzuki, Masaaki: *See*—
Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.

Svendsen, Robert A., to Marine Construction & Design Co. Crab pot line hauler. 4,354,667, Cl. 254-332.000.

Swanson, William C., to International Harvester Co. Hydraulic circuit for a tractor drawn implement having remote variable height selector. 4,354,688, Cl. 280-43.230.

Sweeney, W. Alan, to Chevron Research Company. Motor fuel. 4,354,855, Cl. 44-56.000.

Sweet, Gerald G.: *See*—
Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., 4,355,278, Cl. 324-158.00R.

Swindell, Harold J.; and Thompson, Randall G., to Phillips Petroleum Company. Regenerator temperature control. 4,354,957, Cl. 252-419.000.

Sybron Corporation: *See*—
Hoyer, Gerd; and Pietschmann, Helmut, 4,354,838, Cl. 433-101.000.

Synergistic Controls, Inc.: *See*—
Hughey, Robert M.; Fairchild, James J.; and Brown, James H., 4,355,309, Cl. 340-825.530.

Syntex (U.S.A.) Inc.: *See*—
Verheyden, Julien P.; and Martin, John C., 4,355,032, Cl. 424-253.000.

Szabo, Georges, to Compagnie Francaise de Raffinage. Method for preparing a hydrocarbon conversion catalyst. 4,354,962, Cl. 252-442.000.

Szanto, Elmer G.; Wu, George; and Barone, Salvatore, to Velo-Bind, Inc. Punch edge guide indicator and method. 4,354,405, Cl. 83-13.000.

Szanto, Elmer G., to Velo-Bind, Inc. Punching and binding machine. 4,354,783, Cl. 412-13.000.

Szarazi, Bela: *See*—
Brun, Alain; Marcotte, Louis; and Szarazi, Bela, 4,354,406, Cl. 83-24.000.

Szehi, Erich: *See*—
Strahwald, Franz; and Szehi, Erich, 4,354,509, Cl. 128-803.000.

Szeliga, Philip C., to Electromark, Div. of Mohawk International Inc. Marking head for electrochemical process. 4,354,914, Cl. 204-224.00R.

Sznopek, John L.: *See*—
Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.

Szymanski, Thomas G.: *See*—
Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.

T & T Mfg. Co.: *See*—
Tessier, Aram J., 4,354,767, Cl. 401-63.000.

Tabata, Kazuki; and Honma, Hideaki, to Sankei Giken Kogyo Kabushiki Kaisha. Silencer for motorcycle. 4,354,573, Cl. 181-239.000.

Taguchi, Kenichi: *See*—
Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.

Taguchi, Yoshio: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.

Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for production of magnetic recording medium. 4,354,909, Cl. 204-192.00N.

Takahashi, Kenichi: *See*—
Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.

Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, to Nippon Kogaku K.K. Indicator device within the viewfinder of a camera. 4,354,754, Cl. 354-289.000.

Takami, Toshihiko: *See*—
Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,355,054, Cl. 427-61.000.

Takase, Ichirou: *See*—
Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.

Takata, Tadanobu: *See*—
Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.

Takeda, Atsushi: *See*—
Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, 4,355,149, Cl. 528-18.000.

Takeda Chemical Industries, Ltd.: *See*—
Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,355,040, Cl. 424-273.00R.
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.

Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, to Isuzu Motors Ltd. Diesel throttle valve control system. 4,354,465, Cl. 123-339.000.

Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, to Matsushita Graphic Communication Systems, Inc. System for thermally recording data by partially overlapping successive data segment periods. 4,355,319, Cl. 346-76.0PH.

Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, to Mitsubushi Kinzoku Kabushiki Kaisha. Method for manufacturing stripe-patterned metal plate. 4,354,301, Cl. 29-160.600.

Taki Chemical Co., Ltd.: *See*—
Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.

Taki, Yasuo: *See*—
Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, 4,354,337, Cl. 53-559.000.

Takikawa, Yoshio: *See*—
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Takizawa, Masaaki: *See*—
Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, 4,354,460, Cl. 123-90.160.

Tamai, Yasuo: *See*—
Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.

Tamamori, Hideo: *See*—
Kuroda, Yoichi; and Tamamori, Hideo, 4,354,518, Cl. 137-112.000.

Tamura, Akihiko: *See*—
Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, 4,354,763, Cl. 366-181.000.

Tanaka, Chuji: *See*—
Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.

Tanaka, Haruto: *See*—
Asano, Masaharu; and Tanaka, Haruto, 4,355,360, Cl. 364-431.110.

Tanaka, Hirokazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Tanaka, Masatoshi: *See*—
Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.

Tanaka, Norio; and Ito, Kentaro, to Honda Giken Kogyo Kabushiki Kaisha. Arrangement of air cleaner for a motorcycle. 4,354,570, Cl. 180-219.000.

Tanaka, Yoshiyuki; and Kobori, Masaharu, to Nissan Jidosha Kabushiki Kaisha; and Kato Hatsujo Kabushiki Kaisha. Pedal coupling pin. 4,354,298, Cl. 24-201.0LP.

Tandler, Peter: *See*—
Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.

Taniguchi, Nobuyuki: *See*—
Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.

Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, to Nippon Steel Corporation. Method for antirust treatment of steel stocks. 4,354,881, Cl. 148-6.14R.

Tanouchi, Tadao: *See*—
Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.

Taoayuki Matsuo: *See*—
Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, 4,354,308, Cl. 29-571.000.

Tarantola, Luciano; and Migliarini, Cesare, to Societa Pneumatici Pirelli S.p.A. Apparatuses for applying elastomeric fillers to tire bead-cores. 4,354,892, Cl. 156-398.000.

Tarshis, Andrew: *See*—
Johnson, Tod; Tarshis, Andrew; and Goldberg, George, 4,355,372, Cl. 364-900.000.

Tasch, Al F., Jr.: *See*—
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.

Tatsuoka, Masao; and Fujimura, Katsunori, to Sharp Kabushiki Kaisha. Open-cycle type air conditioner. 4,354,358, Cl. 62-271.000.

Tatsuta, Kuniaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Taylor, Dan G.; and Robertson, Walter W., to Hydro-Pac, Inc. Fail-safe valve. 4,354,664, Cl. 251-282.000.

Taylor, Lloyd D.: *See*—
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,092, Cl. 430-219.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,101, Cl. 430-564.000.

Tazuke, Shigeo: *See*—
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.

Teach, Eugene G., to Stauffer Chemical Company. 3-Perhaloalkylhydroxy-oxaxolidines and thiazolidines herbicidal antidotes. 4,354,867, Cl. 71-88.000.

Technicon Isca Limited: *See*—
Wood, Douglas A., 4,354,622, Cl. 222-55.000.

Teijin Limited: *See*—
Norota, Susumu; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,355,075, Cl. 428-369.000.
Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.

Telefonaktiebolaget L M Ericsson: *See*—
Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.

Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., to Telefonaktiebolaget L M Ericsson. Arrangement for cleaning circuit cards particularly for removing soldering and resin remnants. 4,354,292, Cl. 15-77.000.

Tellert, Rudy, to Sachs-Systemtechnik GmbH. Sinusoidal output generator. 4,355,243, Cl. 307-261.000.

Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. Derivatives of certain pyridyliminomethylbenzenes. 4,355,035, Cl. 424-263.000.

Tenne, Lave; Starp, Franz; and Holzapfel, Walter. Reflex camera having a focal plane shutter and an interchangeable variable shutter objective. 4,354,753, Cl. 354-232.000.

Tenney, Linwood P.: *See*—
Layer, Robert W.; and Tenney, Linwood P., 4,355,148, Cl. 526-281.000.

Terasaki, Masanori, to Daiichi Kashuha Kogyo Kabushiki Kaisha. Method for improving the residual stress in austenitic stainless steel pipes and the like by induction heating. 4,354,883, Cl. 148-127.000.

Terumo Corporation: *See*—
Shimizu, Masaki; and Nomura, Takeo, 4,355,111, Cl. 435-243.000.

Tessier, Aram J., to T & T Mfg. Co. Mechanical pencil. 4,354,767, Cl. 401-63.000.

Testin, William J.: *See*—
George, John B.; and Testin, William J., 4,355,415, Cl. 455-185.000.

Tevruchte, William B.; and Beecroft, Julian B. Convertible house trailer. 4,354,290, Cl. 114-344.000.

Texaco Inc.: *See*—
Hammond, Kenneth G.; and Maas, Garren E., 4,354,950, Cl. 252-51.50A.
Pitman, Herbert J.; and Harrison, Charles W., 4,354,921, Cl. 208-33.000.

Texas Gas Transmission Corporation: *See*—
Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., 4,354,906, Cl. 204-157.10H.

Texas Instruments Incorporated: *See*—
Alsop, John H., IV, 4,355,391, Cl. 371-37.000.
Harris, William S., Jr., 4,355,237, Cl. 250-551.000.
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.

Thanhaeuser, Gerhard: *See*—
Doemer, Josef; and Thanhaeuser, Gerhard, 4,355,400, Cl. 375-4.000.

Theall, C. Earle, to Singer Company, The. Translator system for converting unipolar fiber optic signals to bipolar signals utilizing Manchester coding. 4,355,423, Cl. 455-608.000.

Third Wave Electronics Company, Inc.: *See*—
Davies, Ronald C., 4,354,587, Cl. 194-100.00A.

Thomas, William L.: *See*—
Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.

Thompson, Randall G.: *See*—
Swindell, Harold J.; and Thompson, Randall G., 4,354,957, Cl. 252-419.000.

Thompson, Robert E.: *See*—
Glavas, Xenophon; G.; and Thompson, Robert E., 4,354,645, Cl. 242-117.000.

Thompson, Thomas W., to Sanders Associates, Inc. Force motor. 4,354,662, Cl. 251-129.000.

Thomson-Brandt: *See*—
Bricot, Claude; and Robin, Gerard, 4,354,988, Cl. 264-22.000.

Thomson-CSF: *See*—
Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, 4,355,244, Cl. 307-304.000.

Thorn Emi Limited: *See*—
Hing, Peter; and Kay, Ronald, 4,354,964, Cl. 252-518.000.

Thornton, Robert W.: *See*—
Rumsey, Robert M.; and Thornton, Robert W., 4,354,342, Cl. 57-119.000.

Thury, Wolfgang A.: *See*—
Hummer, Roland; Reinisch, Joseph; and Thury, Wolfgang A., 4,354,869, Cl. 75-63.000.

Thyssen Industrie AG: *See*—
Piepenbreier, Ernst; and Girod, Hansjochen, 4,354,850, Cl. 464-32.000.

Thyssens, Guido M. J. B.: *See*—
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.

Tiberg, Sven-Erik: *See*—
Sinha, Brajnandan; and Tiberg, Sven-Erik, 4,355,297, Cl. 340-58.000.

Tidwell, Hubert. Self-propelled reversible irrigation machine. 4,354,637, Cl. 239-184.000.

Tihanyi, Jeno, to Siemens Aktiengesellschaft. Light-controlled transistor. 4,355,320, Cl. 357-30.000.

Tilman, Paul A., to Minigrip, Inc. Profiled plastics bag closure strip and adhesive bonding method. 4,354,541, Cl. 150-3.000.

Timor, Uzi, to Bell Telephone Laboratories, Incorporated. Adaptive spread spectrum FH-MFSK transmitter and receiver. 4,355,399, Cl. 375-1.000.

Tischer, Werner; and Liebert, Karl-Heinz, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic auxiliary power steering. 4,354,350, Cl. 60-384.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.
Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, to Hitachi, Ltd. Apparatus for measuring specimen potential in electron microscope. 4,355,232, Cl. 250-310.000.
Todoroki, Shigeo: *See*—
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
Tojiki, Hitomi: *See*—
Iwasawa, Teruo; and Tojiki, Hitomi, 4,355,268, Cl. 318-314.000.
Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of substituted acyl ureas. 4,355,178, Cl. 564-44.000.
Tokico Ltd.: *See*—
Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, 4,354,693, Cl. 280-714.000.
Tokuda, Hiroaki: *See*—
Shinkawa, Tsutomu; and Tokuda, Hiroaki, 4,354,831, Cl. 432-263.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fukui, Hiroyuki, 4,355,330, Cl. 358-111.000.
Futaki, Kenji, 4,354,758, Cl. 355-14.00E.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,355,389, Cl. 371-18.000.
Tollum, Ronald E.: *See*—
Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
Tomlinson, Leroy O.; and Cuscino, Richard T., to General Electric Company. Combined cycle system for optimizing cycle efficiency having varying sulfur content fuels. 4,354,347, Cl. 60-39.18B.
Tommasini, Giuseppe: *See*—
Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
Toray Silicone Co., Ltd.: *See*—
Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, 4,355,149, Cl. 528-18.000.
Total, Robert V., to Canadian Stackpole Limited. Label transfer vacuum drum for labeller. 4,354,887, Cl. 156-64.000.
Toth, James M.; and Judd, Tyler W., to Republic Steel Corporation. Eddy current surface flaw detection employing signal correlation. 4,355,281, Cl. 324-232.000.
Towmotor Corporation: *See*—
Macnab, John E., 4,354,794, Cl. 414-607.000.
Toyama, Kenji: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
Toyo Engineering Corporation: *See*—
Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
Toyo Kogyo Co., Ltd.: *See*—
Fujita, Teruhiro, 4,354,464, Cl. 123-323.000.
Koto, Masaaki, 4,354,708, Cl. 296-185.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Nishiyama, Seiichi; and Yamada, Muneki, 4,354,996, Cl. 264-322.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Murakami, Tsugio; Igawa, Kazushige; and Hiraga, Yoichi, 4,355,014, Cl. 423-265.000.
Toyoda, Minoru, to Aisin Seiki Company, Limited. Key holder. 4,354,368, Cl. 70-456.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, 4,354,460, Cl. 123-90.160.
Murata, Yoichi, 4,354,380, Cl. 73-119.00A.
Tracy, Gene A.: *See*—
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
Trafalgar Industries, Inc.: *See*—
Desai, Mahendrakumar D.; and Shuren, Thomas E., 4,354,613, Cl. 221-4.000.
Trane Company, The: *See*—
Modahl, Robert J.; and Luckeroth, Virgil C., 4,354,550, Cl. 165-133.000.
Transolar, Inc.: *See*—
Malone, Kenneth B.; and Grow, Joseph A., Jr., 4,354,484, Cl. 126-425.000.
Trautmann, Horst: *See*—
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.
Trautweiler, Franz, to Ciba-Geigy AG. Composite photographic material having a thin flexable support and a reflecting layer. 4,355,099, Cl. 430-531.000.
Treiber, John. Nestable bulk containers. 4,354,600, Cl. 206-508.000.
Tri-State Oil Tool Industries, Inc.: *See*—
Johnson, Gary R., 4,354,559, Cl. 175-71.000.
Johnson, Gary R., 4,354,560, Cl. 175-267.000.
Triponi, Doarde G.: *See*—
Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,354,407, Cl. 83-55.000.
Troeng, John: *See*—
Broberg, Hans; Douren, Lars; and Troeng, John, 4,354,899, Cl. 159-13.00A.
Trotta, Robert A., to Gillette Company, The. Shaving implement, housing therefor, and razor. 4,354,312, Cl. 30-47.000.
True Temper Railway Appliances, Inc.: *See*—
Kasuba, John A.; Fee, Graham M.; and Hoskins, Phillip M., 4,354,634, Cl. 238-338.000.
Trybulski, Eugene J.: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,354,973, Cl. 260-245.700.
Tsai, Shan P.: *See*—
Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
Tsubata, Noritaka, to Yoshida Kogyo K. K. Woven slide fastener stringer. 4,354,532, Cl. 139-384.00B.
Tsubouchi, Kaoru: *See*—
Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,354,423, Cl. 91-369.00A.
Tsuchikane, Yoshiyuki: *See*—
Kasuga, Masao; Hiyama, Norio; and Tsuchikane, Yoshiyuki, 4,355,304, Cl. 340-347.0DD.
Tsuchiya, Masuo: *See*—
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.
Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Refueling system adapted to gasoline service station. 4,354,620, Cl. 222-14.000.
Turner, Jesse H.; and Wallace, Elmer E., to Essex Group, Inc. Manual main shutoff valve for a gas burner combination control. 4,354,633, Cl. 236-1.00H.
Turpin, Daniel: *See*—
Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.
Tyler, James C., Jr.: *See*—
Kaczur, Jerry J.; Tyler, James C., Jr.; and Simmons, John J., 4,354,942, Cl. 210-712.000.
U-Haul International, Inc.: *See*—
Peoples, Charles B., 4,354,625, Cl. 224-329.000.
Ubel, Helmut: *See*—
Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
Uhler, Roger O.: *See*—
Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., 4,355,055, Cl. 427-96.000.
Ullman, Myron E., Jr., to Kessler Products Co., Inc. Method for deep drawing sheet metal. 4,354,370, Cl. 72-42.000.
Ullman, Myron E., Jr.: *See*—
Kessler, Milton; and Ullman, Myron E., Jr., 4,354,610, Cl. 215-253.000.
Ulmer, Richard W.: *See*—
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.
Ulveling, Leon; and Mailliet, Pierre, to Paul Wurth S.A. Valve for opening and closing a fluid conduit. 4,354,665, Cl. 251-298.000.
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Union Carbide Corporation: *See*—
Fan, You-Ling, 4,355,122, Cl. 523-423.000.
Iya, Sridhar K., 4,354,987, Cl. 264-13.000.
Keller, George E., II; and Kuo, Chia-Huei A., 4,354,859, Cl. 55-25.000.
Wessels, Anton; and Fuderer, Andrija, 4,354,929, Cl. 208-310.00Z.
Unisearch Limited: *See*—
Milner, Christopher J., 4,354,356, Cl. 62-55.500.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.
United States Gypsum Company: *See*—
Hix, Daniel H.; and Closser, Daniel D., 4,354,851, Cl. 8-471.000.
U.S. Industries, Inc.: *See*—
Bruton, Billy R.; Corneillie, Jerome E.; and Perkins, Marion W., 4,354,425, Cl. 92-94.000.
Vanderburg, Ralph W.; and Corneillie, Jerome E., 4,354,663, Cl. 251-210.000.
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Agriculture: *See*—
Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., 4,355,051, Cl. 426-632.000.
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Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., 4,355,278, Cl. 324-158.00R.
Kitchen, Donald R., 4,355,084, Cl. 428-672.000.
Patterson, Charles F., 4,354,419, Cl. 89-1.00A.
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Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, 4,354,821, Cl. 431-7.000.
Interior: *See*—
Hoke, John L.; and Sudia, Theodore W., 4,354,352, Cl. 60-517.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:

Jain, Atul. Multibeam single frequency synthetic aperture radar processor for imaging separate range swaths. 4,355,311, Cl. 343-5.0CM.

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Chai, An-Ti, 4,355,196, Cl. 136-259.000.

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Block, Sheldon A., 4,354,770, Cl. 403-409.000.
Kaufman, Martin H., 4,355,078, Cl. 428-414.000.
Kulik, John J., 4,355,328, Cl. 358-87.000.
Supcoe, Robert F.; and Radakovich, Thomas, 4,354,873, Cl. 106-18.320.
Zeidler, James R.; McCool, John M.; and Widrow, Bernard, 4,355,368, Cl. 364-728.000.

U.S. Philips Corporation: *See*—
Guidoux, Loic B. Y., 4,355,406, Cl. 375-82.000.
Kock, Hendrikus G., 4,355,323, Cl. 357-74.000.
Kools, Franciscus X. N. M.; and Strijbos, Sytse, 4,354,993, Cl. 264-86.000.
Mateika, Dieter; and Bartels, Gunter, 4,355,072, Cl. 428-336.000.
Perduijn, David J.; and Verberkt, Jacobus, 4,355,256, Cl. 310-358.000.
Riemens, Karel; and Van Thuijl, Joannes G. M., 4,355,204, Cl. 179-1.0SA.

United States Surgical Corporation: *See*—
Green, David T., 4,354,628, Cl. 227-19.000.

United Technologies Corporation: *See*—
Cleiford, Douglas H.; and Fowler, Donald W., 4,355,358, Cl. 364-424.000.
Cook, Willard G., Jr., 4,355,299, Cl. 340-58.000.
Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., 4,354,345, Cl. 60-39.080.
Slaughter, Edward R., 4,355,057, Cl. 427-216.000.

University of Michigan, The Regents of the: *See*—
Gooding, Elwyn R., 4,354,283, Cl. 2-413.000.
Gooding, Elwyn R., 4,354,284, Cl. 2-413.000.

University of Missouri, The Curators of the: *See*—
Gaddy, James L.; and Sitton, Oliver C., 4,355,108, Cl. 435-165.000.

University of Washington, The Board of Regents of The: *See*—
Colley, Peter S.; and Martin, Roy W., 4,354,500, Cl. 128-663.000.
Colley, Peter S.; and Martin, Roy W., 4,354,501, Cl. 128-663.000.
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UOP Inc.: *See*—
Carlson, David H. J., 4,354,926, Cl. 208-207.000.
Malloy, Thomas P.; Halter, Mark A.; and House, David W., 4,354,904, Cl. 204-59.00R.
McAndrew, Miles J., 4,354,528, Cl. 137-875.000.

Upjohn Company, The: *See*—
Nelson, Stephen J., 4,354,975, Cl. 549-220.000.

Usui, Yuzo, to Fujitsu Limited. Transistor-transistor logic circuit. 4,355,246, Cl. 307-456.000.

USV Pharmaceutical Corporation: *See*—
Youssefyeh, Raymond D., 4,355,164, Cl. 544-234.000.

Utilux Pty. Limited: *See*—
Karl, Walter, 4,354,790, Cl. 414-222.000.

Uzunoglu, Vasil, to Communications Satellite Corporation. Carrier recovery network for QPSK modems employing synchronized oscillators. 4,355,404, Cl. 375-86.000.

Valcour Imprinted Papers, Inc.: *See*—
Carte, Clyde R., 4,354,408, Cl. 83-162.000.

Van den Berg, Johan H.: *See*—
Le Sausse, Robert T.; and Van den Berg, Johan H., 4,354,293, Cl. 15-250.320.

Vanderburg, Ralph W.; and Corneillie, Jerome E., to U.S. Industries, Inc. Valve construction for sand and slurry service. 4,354,663, Cl. 251-210.000.

van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating implement. 4,354,557, Cl. 172-49.500.

van Dyke, Martin J.: *See*—
Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.

Van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.

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Riemens, Karel; and Van Thuijl, Joannes G. M., 4,355,204, Cl. 179-1.0SA.

van Turnhout, Jan; and Ahuja, Ramesh C., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer. Process for producing a photoconductive polyimide coating upon a substrate. 4,355,089, Cl. 430-130.000.

Van Winkle, Wade L.: *See*—
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.

Varghese, Philip: *See*—
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,354,922, Cl. 208-68.000.

Vari-L Company, Inc.: *See*—
Seely, Warren L., 4,355,421, Cl. 455-327.000.

Varian Associates, Inc.: *See*—
Yeats, Robert E., 4,355,321, Cl. 357-30.000.

Vaughan, Christopher A., to Kango Electric Hammers Limited. Drilling tools. 4,354,779, Cl. 408-241.00S.

Vaughn Corporation: *See*—
Murfitt, Robert R.; and Burtt, Richard F., 4,354,508, Cl. 128-798.000.

Vcala, Vlastimil. Method and apparatus for enhancing the twelve coin balancing puzzle. 4,354,682, Cl. 273-153.00R.

Velo-Bind, Inc.: *See*—
Szanto, Elmer G.; Wu, George; and Barone, Salvatore, 4,354,405, Cl. 83-13.000.
Szanto, Elmer G., 4,354,783, Cl. 412-13.000.

Venkatasetty, Hanumanthiya V.: *See*—
Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., 4,355,086, Cl. 429-105.000.

Verberkt, Jacobus: *See*—
Perduijn, David J.; and Verberkt, Jacobus, 4,355,256, Cl. 310-358.000.

Verbist, Leopold P.: *See*—
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.

Verheyden, Julien P.; and Martin, John C., to Syntex (U.S.A.) Inc. 9-(1,3-Dihydroxy-2-propoxymethyl)guanine as antiviral agent. 4,355,032, Cl. 424-253.000.

Vickers, Thomas M., to Diamond Shamrock Corporation. Composition and process for consolidating soil. 4,354,874, Cl. 106-74.000.

Vickers, Thomas M.: *See*—
Powers, Larry J.; and Vickers, Thomas M., 4,354,875, Cl. 106-74.000.

Villani, Frank J., to Schering Corporation. Tricyclic-substituted piperidine antihistamines. 4,355,036, Cl. 424-267.000.

Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., to Burroughs Corporation. Method for mass producing miniature field effect transistors in high density LSI/VLSI chips. 4,354,307, Cl. 29-571.000.

Virginia Chemicals, Inc.: *See*—
Schumacher, Ernest W.; and Evans, Stephen E., 4,354,362, Cl. 62-474.000.

Vittay, Pal, to Medicor Muvek. Apparatus for supplying high power electric loads operated in a pulse-like manner, especially for X-ray equipment. 4,355,276, Cl. 322-4.000.

Voest-Alpine Aktiengesellschaft: *See*—
Hecht, Hans, 4,354,315, Cl. 33-182.000.

Vogelbacher, Erich: *See*—
Koch, Bernhard R.; and Vogelbacher, Erich, 4,354,530, Cl. 139-54.000.

Vohringer, Gerhard F.; and Hestermann, Gerhard, to ESB Elektrostatische Spruh- und Beschichtungsanlagen G.F. Vohringer GmbH. Device for spray-coating a workpiece with powder particles. 4,354,451, Cl. 118-326.000.

Voigt, Alexander: *See*—
Hendrischk, Wolfgang; and Voigt, Alexander, 4,354,766, Cl. 400-708.000.

Volk, Hans-Joachim; and Forkel, Michael, to Metallwerk Max Brose GmbH & Co. Device for passive actuation of a safety belt. 4,354,696, Cl. 280-804.000.

Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, to Hoechst Aktiengesellschaft. Process for the preparation of 4-phenoxyphenols. 4,355,189, Cl. 568-637.000.

Vollbrecht, Kenneth A., to Briggs & Stratton Corp. Combination end bell and brush holder for a dynamoelectric machine. 4,355,253, Cl. 310-239.000.

von TREU AG: *See*—
Wittenhorst, Augustinus J. M., 4,354,955, Cl. 252-305.000.

von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 4,355,163, Cl. 544-189.000.

von Platen, Baltzar C. Machine for recovering energy by means of a cyclic thermodynamic process. 4,354,361, Cl. 62-467.00R.

Vyrmetoder AB: *See*—
Hallberg, Rolf O., 4,354,937, Cl. 210-607.000.

W. C. Heraeus GmbH: *See*—
Bischoff, Albrecht; and Aldinger, Fritz, 4,355,082, Cl. 428-607.000.

W. M. Still & Sons Limited: *See*—
Filipowicz, Maciej K.; and Hayes, Cecil, 4,354,427, Cl. 99-307.000.

W. R. Grace & Co.: *See*—
Rosenberg, Arnold M.; and Gaidis, James M., 4,355,079, Cl. 428-469.000.

Waagner-Biro A.G.: *See*—
Beckmann, Georg, 4,354,438, Cl. 110-234.000.

Wachi, Yasuyuki: *See*—
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Wahl, Philippe. Combination lock for attache cases and similar articles. 4,354,367, Cl. 70-333.00A.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Apparatus for transferring carriers at discontinuous portion of power line for power-and-free trolley conveyor. 4,354,435, Cl. 104-172.00S.

Wakui, Natsuko: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.

Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, to Hoechst Aktiengesellschaft. Hemodialysis membrane and process and apparatus for using same in hemodialysis. 4,354,938, Cl. 210-637.000.

Walker, Brooks. Carrier for garment bags and the like. 4,354,583, Cl. 190-18.00A.

Walker, Harold R., to Lowe, Frank E. Telemetering system. 4,355,205, Cl. 179-2.00A.

Walker, Loren H.: *See—*
Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.

Wallace, Elmer E.: *See—*
Turner, Jesse H.; and Wallace, Elmer E., 4,354,633, Cl. 236-1.00H.

Walls, John E., to American Hoechst Corporation. Process for heating exposed and developed light-sensitive lithographic printing plates with carboxylic acid and amine moiety containing compounds on surface thereof. 4,355,096, Cl. 430-302.000.

Wallshein, Melvin. Orthodontic biassing device with deformed screw threads. 4,354,832, Cl. 433-7.000.

Walser, Armin: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,354,973, Cl. 260-245.700.

Walsh, Peter A.: *See—*
Williams, David C.; and Walsh, Peter A., 4,355,239, Cl. 307-41.000.

Walter, George R., Jr.: *See—*
Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., 4,355,021, Cl. 424-28.000.

Walters, Eugene G., Jr.; and Ruck, Heinz E., to Fiber-Metal Products Company, The. Welding mask corona barrier. 4,354,279, Cl. 2-8.000.

Walworth, Timothy R.: *See—*
Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.

Wanek, Donald J.: *See—*
King, Francis K.; and Wanek, Donald J., 4,355,339, Cl. 360-105.000.

Wang, Chih C.; and Bates, Ronald F., to RCA Corporation. Bis(hydroxyalkyl)disiloxanes and lubricant compositions thereof. 4,355,062, Cl. 428-64.000.

Ward & Goldstone Limited: *See—*
Hampshire, Michael J.; and Williamson, Jonathan H., 4,355,385, Cl. 370-85.000.

Warlick, Frank M.; and Eloff, Carl J., to Warlick, Frank M. Oil reconditioning apparatus and method. 4,354,946, Cl. 210-774.000.

Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., to Beckman Instruments, Inc. Method and apparatus for negating measurement effects of interferent gases in non-dispersive infrared analyzers. 4,355,233, Cl. 250-343.000.

Washio, Shigeaki: *See—*
Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.

Watanabe, Akira: *See—*
Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.

Watanabe, Toshiyasu: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.

Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Cultivator having a vertically operated engine. 4,354,564, Cl. 180-19.00H.

Watson, Philip R.: *See—*
Lakin, John; and Watson, Philip R., 4,354,571, Cl. 180-271.000.

Wattenhofer, Jean-Pierre: *See—*
Huguenin, Freddy; and Wattenhofer, Jean-Pierre, 4,355,380, Cl. 368-71.C 70.

Wattson, Robert K., Jr.: *See—*
Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.

Weatherholt, Floyd V. Snow attachment for a road grader. 4,354,321, Cl. 37-231.000.

Weatherly Foundry & Manufacturing Co.: *See—*
Smith, William J., 4,354,641, Cl. 241-40.000.

Weaver, Max A.: *See—*
Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., 4,354,970, Cl. 260-158.000.

Webb, Shirley B.: *See—*
Ten Haken, Pieter; and Webb, Shirley B., 4,355,035, Cl. 424-263.000.

Weber, Donald J.: *See—*
Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., 4,354,393, Cl. 74-5.370.

Weber, Gunter, to Linde Aktiengesellschaft. Suppressing decomposition of alkaline solutions of salts of anthraquinonedisulfonic acid. 4,355,011, Cl. 423-224.000.

Weber, Harold J., to Coulter Systems Corporation. Indicia recognition apparatus. 4,355,300, Cl. 340-146.30C.

Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, to Carl Still GmbH & Co. KG, Firma. Process for drying and preheating coal utilizing heat in dry cooling or quenching of coke. 4,354,903, Cl. 201-6.000.

Webster & Assoc. Ltd.: *See—*
Webster, William C., 4,354,876, Cl. 106-85.000.

Webster, William C., to Webster & Assoc. Ltd. Utilization of dry scrubber waste materials. 4,354,876, Cl. 106-85.000.

Weidler, Charles H., to AMP Incorporated. Two-row electrical connector composed of connector modules. 4,354,719, Cl. 339-59.00M.

Weigand, Rex O.: *See—*
Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.

Weigert, Kurt; and Hudek, Karl, deceased (by Hudek, Amanda, Kurt Hudek, Gerd Hudek, heirs), to Siemens Aktiengesellschaft. Electromedical apparatus. 4,354,498, Cl. 128-419.00R.

Weinberg, Felix J.: *See—*
Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.

Weinstein, Jack, to Bristol-Myers Company. Spiral actuator for aerosol powdered suspension product. 4,354,638, Cl. 239-337.000.

Weiss, Eberhard, to International Standard Electric Corporation. Heater for an indirectly heated cathode. 4,355,259, Cl. 313-337.000.

Weissman, Bernard, to IPCO Corporation. Splinting device for anterior teeth. 4,354,840, Cl. 433-215.000.

Welch, Richard M.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.

Welden, David P. Heating apparatus. 4,354,481, Cl. 126-350.00B.

Welker, Robert H. Constant velocity diffuser. 4,354,661, Cl. 251-118.000.

Welsch, Wolfgang: *See—*
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.

Wenzl, Peter: *See—*
Bergthaller, Peter; and Wenzl, Peter, 4,355,185, Cl. 568-50.000.

Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, to Nixdorf Computer AG. Swivel mounting unit. 4,354,654, Cl. 248-663.000.

Werner and Pfleiderer: *See—*
Grimminger, Albert; and Koch, Heinz, 4,354,814, Cl. 425-186.000.

Wesbey, William H.: *See—*
Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.

Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., to American Standard Inc. Jacking tool for installing and removing draft gears on railway cars. 4,354,302, Cl. 29-252.000.

Wessels, Anton; and Fuderer, Andrija, to Union Carbide Corporation. Process for separating normal paraffins from hydrocarbons mixtures. 4,354,929, Cl. 208-310.00Z.

Westdale, Virgil W.; and Novotny, John, Jr., to Am International, Inc. Polyethylene pressure fixable electroscopic printing powder and pressure fixing method. 4,355,088, Cl. 430-98.000.

Western Electric Company Inc.: *See—*
Dodd, Thomas C.; and Emerson, John A., 4,354,911, Cl. 204-192.0EC.
Wiechard, Charles A., 4,354,995, Cl. 264-250.000.

Westinghouse Electric Corp.: *See—*
Franz, James H., Jr.; and Jones, Stanley W., 4,355,267, Cl. 318-89.000.
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,354,830, Cl. 432-258.000.
Marmo, Anthony R., 4,354,811, Cl. 425-140.000.
Phillips, John S.; and Melvin, Waymon A., Jr., 4,355,303, Cl. 340-310.00A.

Westphal, Teddy M., to Boise Cascade Corporation. Method and apparatus for forming a non-silver scored metal end. 4,354,784, Cl. 413-12.000.

Westwood Pharmaceuticals, Inc.: *See—*
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,355,028, Cl. 424-230.000.

Weyandt, Ronald R., to Automated Packaging Systems, Inc. Braking method and apparatus for vibratory feeder. 4,354,618, Cl. 221-186.000.

Whatley, Roger A.: *See—*
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.

Wheeler, Edward S.; and Campagna, Anthony J., to Interpace Corporation. Polymer rod insulator with improved radio noise and corona characteristics. 4,355,200, Cl. 174-140.00S.

Wheeler, James W., to Du Pont de Nemours, E. I., and Company. Supersensitizing direct positive dye combinations. 4,355,098, Cl. 430-510.000.

Whitbread, John R.: *See—*
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.

White Consolidated Industries, Inc.: *See—*
Silver, Theodore R., 4,354,294, Cl. 15-317.000.

White, George H., to National Gypsum Company. Hard-edge wallboard. 4,354,885, Cl. 156-39.000.

White, Herbert A., Jr., to American General Supply Company. Light weight ingot mold mat. 4,354,659, Cl. 249-206.000.

White, Richard L., administrator: *See—*
Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.

White, Susan M.: *See—*
Cantello, Barrie C. C.; and White, Susan M., 4,355,004, Cl. 422-246.000.

Whitehurst, Darrell D.: *See—*
Derbyahire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,354,922, Cl. 208-68.000.

Widrow, Bernard: *See—*
Zeidler, James R.; McCool, John M.; and Widrow, Bernard, 4,355,368, Cl. 364-728.000.

Wiebus, Ernst: *See—*
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.

Wiechard, Charles A., to Western Electric Company, Inc. Method for making a connector conductor cutter. 4,354,995, Cl. 264-250.000.

Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, to CITO Products, Inc. Method and apparatus for mold temperature control. 4,354,812, Cl. 425-144.000.

Wieder, Klaus A.: *See*—
Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, 4,354,812, Cl. 425-144.000.

Wiggins Teape Group Limited: *See*—
Hall, Robert J., 4,355,226, Cl. 219-384.000.

Wildhardt, Jurgen: *See*—
Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.

Wilger, John A.: *See*—
Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., 4,354,931, Cl. 210-136.000.

Wilhelm, Daniel C.: *See*—
Maczuga, Jacob W.; and Wilhelm, Daniel C., 4,354,986, Cl. 264-8.000.

Wilkinson, Basil S.: *See*—
Simons, Ronald H.; and Wilkinson, Basil S., 4,355,349, Cl. 362-153.000.

Williams, Albert G., to Celanese Corporation. Spinning process for antimony oxide/halogenated aromatic polyester composition. 4,354,994, Cl. 264-169.000.

Williams, Albert G., to Celanese Corporation. Solvent resistant halogenated aromatic polyester fibers and process therefor. 4,355,152, Cl. 528-191.000.

Williams, Bradford J.: *See*—
Kane, Hugh; and Williams, Bradford J., 4,355,216, Cl. 200-16.00A.

Williams, David C.; and Walsh, Peter A., to Lucas Industries Limited. Electrical power supply arrangement. 4,355,239, Cl. 307-41.000.

Williams, Rafelix A., to Hercules Incorporated. Process for preparing progressive burning propellant granules. 4,354,884, Cl. 149-10.000.

Williams Research Corporation: *See*—
Cruzen, Gerald S., 4,354,804, Cl. 416-230.000.

Williams, Theodore R. Audio signal responsive optical display. 4,355,348, Cl. 362-86.000.

Williamson, Jonathan H.: *See*—
Hampshire, Michael J.; and Williamson, Jonathan H., 4,355,385, Cl. 370-85.000.

Willingham, Francis Y.: *See*—
Hutchison, Ralph M.; Martin, Phillip C.; and Willingham, Francis Y., 4,354,878, Cl. 106-120.000.

Willis, Stephen B., Jr.; and Henry, Joseph D., to Dow Chemical Company, The. Process for ethanolamines. 4,355,181, Cl. 564-477.000.

Wilmot, Richard D.: *See*—
Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.

Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, to Massachusetts Institute of Technology. Machine for processing fish. 4,354,297, Cl. 17-54.000.

Wilson, Robert M., Sr. Electric fence wire mounting structure. 4,355,201, Cl. 174-166.00R.

Wilson, Stephen S.; and Joseph, Peter M. Method and apparatus for measuring the applied kilovoltage of X-ray sources. 4,355,230, Cl. 250-252.100.

Wilson, William L. Modular orthodontic appliances. 4,354,834, Cl. 433-21.000.

Winkler, Heinrich: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.

Winter, George, to Commonwealth Scientific and Industrial Research Organization. Recovery of heavy metals from solution by extraction with cross-linked vegetable protein. 4,355,137, Cl. 525-54.100.

Wippermann, Gerhard; and Keller, Peter, to Bramlage GmbH. Container for the dispensing of tablets one by one. 4,354,619, Cl. 221-263.000.

Wire Matic Regler AB: *See*—
Nordlund, Sven, 4,354,424, Cl. 92-69.00R.

Wirz, Jakob, to Spuhl AG. Multi-pivotable mold carrier clamping apparatus. 4,354,819, Cl. 425-409.000.

Wisconsin Alumni Research Foundation: *See*—
Beyer, James B.; and Summers, James B., 4,355,289, Cl. 332-17.000.

Wise, Lawrence A., to Optimetrix Corporation. Shutter mechanism. 4,355,272, Cl. 318-561.000.

Wise, Richard M., to General Tire & Rubber Company, The. Adhesion of rubber to glass fibers. 4,355,131, Cl. 524-504.000.

Witek, Joseph I., to Medalist Industries, Inc. Tubing connector. 4,354,768, Cl. 403-3.000.

Wittenhorst, Augustinus J. M., to von TREU AG. Process and apparatus for producing propellant of reduced combustibility. 4,354,955, Cl. 252-305.000.

Wittmann, Rolf: *See*—
Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.

Wolf, Elmar: *See*—
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,355,058, Cl. 427-386.000.

Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of riboflavin. 4,355,158, Cl. 536-1.000.

Wolfertz, Gunter, to Schaeffer-Homberg GmbH. Device on an attachment machine. 4,354,588, Cl. 198-394.000.

Wolpert, Kris E.: *See*—
Kumar, Tribhawan; and Wolpert, Kris E., 4,354,858, Cl. 55-6.000.

Wong, Michael S. F.: *See*—
Hoskinson, Ronald M.; Cox, Ronald L.; and Wong, Michael S. F., 4,354,977, Cl. 260-397.400.

Wood, Douglas A., to Technicon Isca Limited. Flow control systems. 4,354,622, Cl. 222-55.000.

Wooding, Michael S., to British Aerospace. Intake ducts for aircraft jet propulsion plant. 4,354,346, Cl. 60-39.09P.

Woolland, Roderic F. Golfer's stance positioning aid. 4,354,683, Cl. 273-187.00R.

Worrall, Howard J.: *See*—
Austin, Eric P.; and Worrall, Howard J., 4,354,935, Cl. 210-396.000.

Wortham, Larry C.: *See*—
McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.

Wu, George: *See*—
Szanto, Elmer G.; Wu, George; and Barone, Salvatore, 4,354,405, Cl. 83-13.000.

Wudtke, Donald J ., to Continental Emsco Company. Motion compensator and control system for crane. 4,354,608, Cl. 212-191.000.

Wunderlich, Daniel F., to Maytag Company, The. Presettable index mechanism for selectively actuatable timer. 4,355,218, Cl. 200-38.00F.

Wunderlich, Klaus: *See*—
von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.

Wurtman, Richard J.: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,355,027, Cl. 424-199.000.

Wysk, Stanley R.; and Clark, James P., III, to Combustion Engineering, Inc. System for recovery of sulfur dioxide in an MHD power plant. 4,354,354, Cl. 60-655.000.

X-Ray Manufacturing & Supply, Inc.: *See*—
Sullins, James R., 4,355,410, Cl. 378-199.000.

Xerox Corporation: *See*—
Ciccarelli, Roger N., 4,355,167, Cl. 546-255.000.
DuVall, Wilbur E., 4,355,273, Cl. 318-561.000.
Marsh, Dana G., 4,355,225, Cl. 219-216.000.

Yagi, Kazutomo, to Kyoritsu Manufacturing Co., Ltd. Method of making shackle. 4,354,344, Cl. 59-35.00R.

Yamada, Keiichi: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.

Yamada, Muneki: *See*—
Nishiyama, Seiichi; and Yamada, Muneki, 4,354,996, Cl. 264-322.000.

Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Method for making a diffusion transfer lithographic printing plates with oxazolidones. 4,355,090, Cl. 430-204.000.

Yamaguchi, Jun: *See*—
Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.

Yamakawa, Norio: *See*—
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of cis-non-en-6-yl chloride. 4,355,193, Cl. 570-217.000.

Yamamoto, Shinichi; and Ito, Toshihiko, to Nippon Soken, Inc. Extrusion die and method for producing extrusion die for forming a honeycomb structure. 4,354,820, Cl. 425-461.000.

Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, to Nippon Columbia K.K. Duplicator. 4,355,338, Cl. 360-15.000.

Yamashita, Katsuyoshi: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.

Yamashita, Kiyoshi: *See*—
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

Yamashita, Kyoichi. Device for high speed feeding of a tape or the like. 4,354,627, Cl. 226-188.000.

Yamato, Akihiro: *See*—
Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.

Yamazaki, Etsuo: *See*—
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,355,362, Cl. 364-474.000.

Yan, Tsoung Y.: *See*—
Audeh, Costandi A.; and Yan, Tsoung Y., 4,354,928, Cl. 208-309.000.

Yanagiuchi, Shigenobu, to Sharp Kabushiki Kaisha. Storage format in a word memory of electronic dictionary and language interpreter. 4,355,370, Cl. 364-900.000.

Yanik, Richard W.; and Herold, Albert J., to Standard Oil Company, The. Hot water precipitation of resins containing maleic anhydride. 4,355,157, Cl. 528-499.000.

Yeats, Robert E., to Varian Associates, Inc. Optoelectronic assembly including light transmissive single crystal semiconductor window. 4,355,321, Cl. 357-30.000.

Yeh, Yu S.: *See*—
Reudink, Douglas O.; and Yeh, Yu S., 4,355,411, Cl. 455-33.000.

Yonemoto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Speed instruction generating device for elevator. 4,354,577, Cl. 187-29.00R.

Yoshida Kogyo K. K.: *See*—
Tsubata, Noritaka, 4,354,532, Cl. 139-384.00B.

Yoshida, Mitsuo; and Matsuoka, Hiroyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for the electrolysis of an aqueous solution of an alkali metal chloride and an anode therefor. 4,354,905, Cl. 204-98.000.

Yoshida, Shinichi; and Kobayashi, Kazutaka, to Nipon Interphone Co., Ltd. Remote station. 4,355,329, Cl. 358-108.000.

Young, Ian R.; and Burl, Michael, to Picker International Limited. Nuclear magnetic resonance systems. 4,355,282, Cl. 324-309.000.

Young, Robert F.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,354,848, Cl. 440-61.000.

Young, Robert J. Exercising and toning device. 4,354,677, Cl. 272-144.000.

Younge, Robert G., to Hewlett-Packard Company. Means and method for velocity decoding. 4,355,279, Cl. 324-161.000.

Youssefyeh, Raymond D., to USV Pharmaceutical Corporation. Pyridothienopyridazine anti-allergy compounds. 4,355,164, Cl. 544-234.000.

Yuda, Takuo, to Nifco Inc. Radiator grille fixing structure. 4,354,566, Cl. 180-68.00P.

Zack, Alexander T.: *See*—
Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., 4,355,265, Cl. 315-290.000.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Ilg, Rudolf, 4,354,808, Cl. 418-259.000.
Lang, Armin, 4,354,555, Cl. 172-4.000.
Tischer, Werner; and Liebert, Karl-Heinz, 4,354,350, Cl. 60-384.000.

Zahnradfabrik Friedrichshafen A.G.: *See*—
Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Zajic, James E.; Gerson, Donald F.; Gerson, Richard K.; and Panchal, Chandrakant J. Microbiological production of novel biosurfactants. 4,355,109, Cl. 435-170.000.

Zamek, Otto S.: *See*—
Lee, Yue-Guey L.; and Zamek, Otto S., 4,354,965, Cl. 524-104.000.

Zanella, Dominic A.: *See*—
Renfrew, Edgar E.; and Zanella, Dominic A., 4,355,012, Cl. 423-226.000.

Zannucci, Joseph S., to Eastman Kodak Company. Polyester-acrylic composite sheet having improved weatherability. 4,355,080, Cl. 428-483.000.

Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., to Pittway Corporation. Sensor mounting assembly. 4,354,652, Cl. 248-201.000.

Zeidler, James R.; McCool, John M.; and Widrow, Bernard, to United States of America, Navy. Adaptive correlator. 4,355,368, Cl. 364-728.000.

Zeigler, Myron C., to Shakespeare Company. Composite tubular rod and method for making same. 4,355,061, Cl. 428-36.000.

Zenith Radio Corporation: *See*—
Dougherty, Lawrence W., 4,355,260, Cl. 313-404.000.
Fitzgibbon, James J.; and Sutton, Leroy, 4,355,334, Cl. 358-168.000.
Lee, Ronald B., 4,355,326, Cl. 358-37.000.

Zerfass, Hans-Reiner: *See*—
Beyer, Horst; and Zerfass, Hans-Reiner, 4,355,068, Cl. 428-290.000.

Ziegler, Ann L., heir: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Zimlich, Josef: *See*—
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.

Zimmer, Erich: *See*—
Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,354,635, Cl. 239-11.000.

Zimmer, Max: *See*—
Mathis, Paul; and Zimmer, Max, 4,354,317, Cl. 34-33.000.

Zimmerlin, Sharon L.: *See*—
Dalla Betta, Ralph A.; and Zimmerlin, Sharon L., 4,355,056, Cl. 427-126.400.

Zimmerman, Harlan S.; and Rhoads, James L., to RCA Corporation. Intensified charge coupled image sensor having universal header assembly. 4,355,229, Cl. 250-213.0VT.

Zingg, Warren M., to Dow Chemical Company, The. Slurry concentrator. 4,354,552, Cl. 166-90.000.

Zink, Stanley C., to Black Clawson Company, The. Two sided coater. 4,354,449, Cl. 118-126.000.

Zinn, Michael F., to Bio-Energy Systems, Inc. Header pair and double tube mat connection. 4,354,546, Cl. 165-1.000.

Zirps, Wilhelm, to Robert Bosch GmbH. Pressure valve. 4,354,517, Cl. 132-110.000.

Zoulek, James R. Log periodic directional antenna. 4,355,315, Cl. 343-792.500.

Zwipf, Werner H.: *See*—
Buehl, Arnold L.; and Zwipf, Werner H., 4,354,823, Cl. 431-328.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Standard Inc.: *See*—
Hart, James E., Re. 31,059, Cl. 303-38.000.
Automatic Truckloading Systems, Inc.: *See*—
Lutz, David W., Re. 31,060, Cl. 414-28.000.
Burke, Edward F., Jr., to MFE Corporation. Limited-rotation motor with integral displacement transducer. Re. 31,062, Cl. 335-229.000.
Hart, James E., to American Standard Inc. Emergency portion for a brake control valve. Re. 31,059, Cl. 303-38.000.
Lutz, David W., to Automatic Truckloading Systems, Inc. Article handling apparatus. Re. 31,060, Cl. 414-28.000.
MFE Corporation: *See*—
Burke, Edward F., Jr., Re. 31,062, Cl. 335-229.000.
Povejsil, James H., to Towmotor Corporation. Seal and seal assembly. Re. 31,058, Cl. 277-153.000.
Sandoz, Inc.: *See*—
Simpson, William R., Re. 31,061, Cl. 260-239.0BC.
Simpson, William R., to Sandoz, Inc. 5-Amino or substituted amino-7-phenyl or substituted phenyl-2,3-dihydro-1H-1,4-diazepines. Re. 31,061, Cl. 260-239.0BC.
Towmotor Corporation: *See*—
Povejsil, James H., Re. 31,058, Cl. 277-153.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bittner, Edward D., to Cascade Corporation. Lift truck load clamp having nonresilient contact pad surfaces textured for directionally variable resistance to slippage. B1 4,209,280, Cl. 414-620.
Cascade Corporation: *See*—
Bittner, Edward D., B1 4,209,280, Cl. 414-620.
Continental Group, Inc., The: *See*—
Halk, Jr., Albert J.; and Boik, Arnold R., B1 4,182,460, Cl. 220-271.
Fletcher, John K., to Harvey Engineering & Manufacturing Corporation. Detachable sling letdown apparatus for lumber sorter. B1 4,104,156, Cl. 209-521.
Harvey Engineering & Manufacturing Corporation: *See*—
Fletcher, John K., B1 4,104,156, Cl. 4209-521.
Halk, Jr., Albert J.; and Boik, Arnold R., to Continental Group, Inc., The. Lever action tab system for easy opening ends. B1 4,182,460, Cl. 220-271.
Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, to Toray Industries, Inc. B 1 3,865,678, Cl. 428-91.
Toray Industries, Inc.: *See*—
Okamoto, Miyoshi; Yoshida, Shusuki; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, B1 3,865,678, Cl. 428-91.

LIST OF DESIGN PATENTEES

A.Ahlstrom Osakeyhtio: *See*—
Sarpaneva, Timo, 266,594, Cl. D26-9.000.
Sarpaneva, Timo, 266,595, Cl. D26-10.000.
A/S Tasso Odense: *See*—
Rasmussen, Henning, 266,580, Cl. D23-90.000.
Albertsen, Peter S.: *See*—
Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., 266,582, Cl. D23-97.000.
American Standard Inc.: *See*—
Kaiser, Jack N., 266,577, Cl. D23-70.000.
Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 266,616, 10-19-82, Cl. D59-2.00B.
Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 266,617, 10-19-82, Cl. D59-2.00B.
Arizona Digital Corp.: *See*—
White, Edward A., 266,563, Cl. D14-100.000.
Arthur, David S. Tricycle. 266,556, 10-19-82, Cl. D12-112.000.
Auto Register, Inc.: *See*—
Margolin, George D.; and Tooke, Michael, 266,564, Cl. D14-102.000.
Barats, Jury M.; Kiklevich, Jury N.; and Selin, Valentin A. Individual heat-reflecting device. 266,579, 10-19-82, Cl. D23-77.000.
Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,621, 10-19-82, Cl. D99-24.000.
Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,622, 10-19-82, Cl. D99-24.000.
Barberena, Pablo P. Elevatsd multiple dome funeral mausoleum. 266,623, 10-19-82, Cl. D99-24.000.
Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,624, 10-19-82, Cl. D99-24.000.
Bartscher, Franz, to Josef Schonlau Maschinenfabrik-und Eisengiesserei. Floor panel for a pig shed. 266,608, 10-19-82, Cl. D30-2.000.
Bartscher, Franz, to Josef Schonlau Maschinenfabrik und Eisengiesserei. Floor panel for a pig shed. 266,609, 10-19-82, Cl. D30-2.000.
Bartscher, Franz, to Josef Schonlau Maschinenfabrik u. Eisengiesserei. Floor panel for a pig shed. 266,610, 10-19-82, Cl. D30-2.000.
Baumann, Dieter: *See*—
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
Baumann, Rolf: *See*—
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
Bavis, Edward F., to E. F. Bavis & Associates, Inc. Building structure. 266,592, 10-19-82, Cl. D25-31.000.
Bee, James W. M.; and Trussler, Peter D. H., to Northern Telecom Limited. Telephone handset. 266,561, 10-19-82, Cl. D14-63.000.
Belden Corporation: *See*—
Gibbs, Ronald D., 266,559, Cl. D13-28.000.
Bennett, Harry. Acoustic ear mold. 266,590, 10-19-82, Cl. D24-35.000.
Beretta, Angelo V., to Durastone Company, Inc. Reflective pavement marker for roads. 266,554, 10-19-82, Cl. D10-113.000.
Bickmeyer, Robert. Stove. 266,583, 10-19-82, Cl. D23-97.000.
Bidegain, Georgy: *See*—
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, to Bidegain S.A. Footgauge. 266,552, 10-19-82, Cl. D10-70.000.
Bidegain S.A.: *See*—
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
Breen, John D.; and Ihrie, Ronald L., to Murray Ohio Manufacturing Co., The. Combined bicycle sprocket and chain guard. 266,558, 10-19-82, Cl. D12-123.000.

Caldwell, John W., to Pacific Furniture Manufacturing Co. Bench. 266,545, 10-19-82, Cl. D6-60.000.
Carlstrom, William, to Lyle/Carlstrom Associates, Inc. Shelf rest. 266,551, 10-19-82, Cl. D8-381.000.
Chalandard, Roger, to Dessoy et Fils. Toy vehicle. 266,572, 10-19-82, Cl. D21-120.000.
Charbonneau, Harry. Telephone list holder. 266,571, 10-19-82, Cl. D19-76.000.
Choe, Sunjeen. Handpiece for manicure machine. 266,607, 10-19-82, Cl. D28-58.000.
Crothers, Stephen A. Spectacle weight reliever. 266,559, 10-19-82, Cl. D16-123.000.
Crutchfield, E. Bryant, to Mead Corporation, The. Document file. 266,544, 10-19-82, Cl. D3-72.000.
DeKrech Enterprises, Inc.: *See*—
Krech, David E., 266,619, Cl. D99-5.000.
Krech, David E., 266,620, Cl. D99-5.000.
Dessoy et Fils: *See*—
Chalandard, Roger, 266,572, Cl. D21-120.000.
Durastone Company, Inc.: *See*—
Beretta, Angelo V., 266,554, Cl. D10-113.000.
E. F. Bavis & Associates, Inc.: *See*—
Bavis, Edward F., 266,592, Cl. D25-31.000.
Emary, Robert J.: *See*—
Gilford, Saul R.; and Emary, Robert J., 266,589, Cl. D24-31.000.
Entex Industries, Inc.: *See*—
Hanzawa, Tsuneo, 266,573, Cl. D21-140.000.
Erickson, Alve J.: *See*—
Thulman, Robert D.; and Erickson, Alve J., 266,584, Cl. D23-97.000.
Famolare, Inc.: *See*—
Famolare, Joseph P., Jr., 266,542, Cl. D2-320.000.
Famolare, Joseph P., Jr., to Famolare, Inc. Treaded shoe bottom. 266,542, 10-19-82, Cl. D2-320.000.
Ferrara, Leonard H., Jr., to Superior Stove Company, Inc. Wood stove. 266,581, 10-19-82, Cl. D23-97.000.
Foseco Trading AG: *See*—
Wukovich, Nick, 266,567, Cl. D15-135.000.
Fratelli Saporiti: *See*—
Offredi, Giovanni, 266,547, Cl. D6-146.000.
Gardisette International AG: *See*—
Stocker, Hans, 266,615, Cl. D47-6.00E.
Stocker, Hans, 266,618, Cl. D92-1.00C.
Geiter, Robert: *See*—
Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., 266,582, Cl. D23-97.000.
General Electric Company: *See*—
Newgard, Jon M., 266,596, Cl. D26-24.000.
Gibbs, Ronald D., to Belden Corporation. Body for electric plug. 266,559, 10-19-82, Cl. D13-28.000.
Gilford Instrument Laboratories, Inc.: *See*—
Gilford, Saul R.; and Emary, Robert J., 266,589, Cl. D24-31.000.
Gilford, Saul R.; and Emary, Robert J., to Gilford Instrument Laboratories, Inc. Cuvette housing. 266,589, 10-19-82, Cl. D24-31.000.
Goodwin, Richard J. Kitchen utensil rack. 266,546, 10-19-82, Cl. D6-113.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Toy vehicle or the like. 266,573, 10-19-82, Cl. D21-140.000.
Harmon, John R.: *See*—
Metts, Thomas; and Harmon, John R., 266,611, Cl. D30-15.000.
Harrison, Jeffrey, to Kallista Baths, Inc. Bathtub. 266,576, 10-19-82, Cl. D23-55.000.
Hattori, Yoshioka, to Tomishiba Denki Co., Ltd. Radio set. 266,562, 10-19-82, Cl. D14-68.000.
Huber, John, Jr. Table. 266,548, 10-19-82, Cl. D6-146.000.
Hug, Niklaus, to Rommag P. Worwag & Co. Vacuum cleaner. 266,612, 10-19-82, Cl. D32-23.000.
Ihrie, Ronald L.: *See*—
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Ishihara, Sadao: *See*—
Sakow, Toshihiko; Katayama, Isao; and Ishihara, Sadao, 266,568, Cl. D16-30.000.
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Josef Schonlau Maschinenfabrik u. Eisengiesserei: *See*—
Bartscher, Franz, 266,610, Cl. D30-2.000.
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Harrison, Jeffrey, 266,576, Cl. D23-55.000.
Katayama, Isao: *See*—
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Ryan, Lenore S., 266,591, Cl. D24-50.000.
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Satoh, Masatoshi, 266,587, Cl. D23-155.000.
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Reiss, Harold, 266,543, Cl. D3-30.100.
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Carlstrom, William, 266,551, Cl. D8-381.000.
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Crutchfield, E. Bryant, 266,544, Cl. D3-72.000.
Mellars, John W., to Warner-Lambert Company. Cuvette tray design 266,588, 10-19-82, Cl. D24-17.000.
Metts, Thomas; and Harmon, John R. Bird feeder. 266,611, 10-19-82, Cl. D30-15.000.
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Breen, John D.; and Ihrie, Ronald L., 266,558, Cl. D12-123.000.
Myodo, Kenichi, to Shinko Kinzoku Kabushiki Kaisha. Mug. 266,550, 10-19-82, Cl. D7-9.000.
Nacinovich, Ken, to Speedo Knitting Mills Pty Limited. Shorts. 266,540, 10-19-82, Cl. D2-42.000.
Nelles, Wilhelm. Wall inserted step or hand box. 266,593, 10-19-82, Cl. D25-69.000.
Neville, Donald, to Plastiglide Manufacturing Corporation. Roller. 266,614, 10-19-82, Cl. D34-29.000.
Newgard, Jon M., to General Electric Company. Floodlight. 266,596, 10-19-82, Cl. D26-24.000.
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Rakocy, William J.; and Muller, Ronald L., 266,585, Cl. D23-149.000.
Rakocy, William J.; and Muller, Ronald L., 266,586, Cl. D23-149.000.
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Bee, James W. M.; and Trussler, Peter D. H., 266,561, Cl. D14-63.000.
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Smith, Morley L., 266,565, Cl. D15-112.000.
Pacific Furniture Manufacturing Co.: *See*—
Caldwell, John W., 266,545, Cl. D6-60.000.
Perry, James M. Shirt. 266,541, 10-19-82, Cl. D2-215.000.
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Appleman, Donald T., 266,616, Cl. D59-2.00B.
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Rakocy, William J.; and Muller, Ronald L., to North American Philips Corporation. Room air cleaner. 266,585, 10-19-82, Cl. D23-149.000.
Rakocy, William J.; and Muller, Ronald L., to North American Philips Corporation. Room air cleaner. 266,586, 10-19-82, Cl. D23-149.000.
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Hug, Niklaus, 266,612, Cl. D32-23.000.

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Myodo, Kenichi, 266,550, Cl. D7-9.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Mori, Masahiko, 266,570, Cl. D18-22.000.
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Hattori, Yoshitaka, 266,562, Cl. D14-68.000.
Tooke, Michael: *See*—
Margolin, George D.; and Tooke, Michael, 266,564, Cl. D14-102.000.
Trussler, Peter D. H.: *See*—
Bee, James W. M.; and Trussler, Peter D. H., 266,561, Cl. D14-63.000.
Ushio Denki Kabushiki Kaisha: *See*—
Suzuki, Yoshikazu, 266,598, Cl. D26-28.000.
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Suzuki, Yoshikazu, 266,600, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,601, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,602, Cl. D26-113.000.
Suzuki, Yoshikazu, 266,603, Cl. D26-139.000.
Suzuki, Yoshikazu, 266,604, Cl. D26-139.000.
Warner-Lambert Company: *See*—
Mellars, John W., 266,588, Cl. D24-17.000.
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 19, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

8	4,354,279
16	4,354,280
69.5	4,354,281
115	4,354,282
413	4,354,283
	4,354,284
424	4,354,285

CLASS 3

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CLASS 5

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400	4,354,288
451	4,354,289

CLASS 8

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CLASS 15

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77	4,354,292
250.32	4,354,293
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CLASS 23

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527.1	4,354,304
568	4,354,305
	4,354,306
571	4,354,307
	4,354,308
	4,354,309
605	4,354,310
840	4,354,311

CLASS 30

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161	4,354,313
293	4,354,314

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CLASS 34

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33	4,354,317

CLASS 36

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CLASS 37

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231	4,354,321

CLASS 42

75 D	4,354,322

CLASS 43

4	4,354,323
15	4,354,324
105	4,354,325

CLASS 44

56	4,354,855

CLASS 46

74 D	4,354,326

CLASS 47

58	4,354,327

CLASS 51

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66	4,354,331
514	4,354,332

CLASS 53

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	4,354,334
475	4,354,335
505	4,354,336
559	4,354,337

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3	4,354,856
6	4,354,857
	4,354,858
25	4,354,859
105	4,354,860
130	4,354,861
296	4,354,862
436	4,354,863

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CLASS 57

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279	4,354,343

CLASS 59

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39.09 P	4,354,346
39.18 B	4,354,347
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299	4,354,349
384	4,354,350
456	4,354,351
517	4,354,352
554	4,354,353
655	4,354,354

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216	4,354,357
271	4,354,358
299	4,354,359
320	4,354,360
467 R	4,354,361
474	4,354,362

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29	4,354,865
99.5	4,354,866

CLASS 66

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312	4,354,366
333 A	4,354,367
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42	4,354,370
53	4,354,371
177	4,354,372
247	4,354,373
389	4,354,374
449	4,354,375

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37	4,354,379
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151	4,354,381
290 B	4,354,383
290 R	4,354,382
487	4,354,386
597	4,354,387
612	4,354,388
749	4,354,389
862.03	4,354,390
863.11	4,354,391
863.86	4,354,392

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5.44	4,354,394
41	4,354,395
104	4,354,396
108	4,354,397
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551.1	4,354,399
687	4,354,400
689	4,354,401
822	4,354,402

CLASS 75

60	4,354,868
63	4,354,869
108	4,354,870

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CLASS 82

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24	4,354,406
55	4,354,407
162	4,354,408
285	4,354,409
471.3	4,354,410
862	4,354,411

CLASS 84

1.01	4,354,412
	4,354,413
1.24	4,354,414
	4,354,415
309	4,354,416
312 R	4,354,417
454	4,354,418

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CLASS 91

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39	4,354,421
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369 A	4,354,423

CLASS 92

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94	4,354,425
235	4,354,426

CLASS 99

307	4,354,427
639	4,354,428

CLASS 100

5	4,354,429
192	4,354,430

CLASS 101

247	4,354,431

CLASS 102

202.7	4,354,432
307	4,354,433

CLASS 104

103	4,354,434
172 S	4,354,435

CLASS 106

3	4,354,871
14.27	4,354,872
18.32	4,354,873
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	4,354,875
85	4,354,876
90	4,354,877
120	4,354,878
163 R	4,354,879

CLASS 108

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153	4,354,437

CLASS 110

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245	4,354,439
346	4,354,440

CLASS 112

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158 E	4,354,442
440	4,354,443

CLASS 114

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218	4,354,445
230	4,354,446
255	4,354,447
344	4,354,290

CLASS 116

161	4,354,448

CLASS 118

126	4,354,449
303	4,354,450
326	4,354,451
413	4,354,452
426	4,354,453
658	4,354,454
700	4,354,455
721	4,354,456

CLASS 119

3	4,354,457

CLASS 123

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80 BA	4,354,459
90.16	4,354,460
195 AC	4,354,461
241	4,354,462
308	4,354,463
323	4,354,464
339	4,354,465
	4,354,466
352	4,354,467
440	4,354,468
460	4,354,469
472	4,354,470
481	4,354,471
493	4,354,472
501	4,354,473
502	4,354,474
525	4,354,475
569	4,354,476
575	4,354,477

CLASS 126

39 E	4,354,478
92 AC	4,354,479
123	4,354,480
350 B	4,354,481
409	4,354,482
419	4,354,483
425	4,354,484

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132 D	4,354,486
156	4,354,487
205.25	4,354,488
206.14	4,354,489
213 A	4,354,490
214 E	4,354,492
214.4	4,354,491
276	4,354,493
294	4,354,494
348	4,354,495
403	4,354,496
419 D	4,354,497
419 R	4,354,498
653	4,354,499
663	4,354,500
	4,354,501
	4,354,502
686	4,354,503
691	4,354,504
732	4,354,505
748	4,354,506
763	4,354,507
798	4,354,508
803	4,354,509

CLASS 131

235 R	4,354,510
324	4,354,511

CLASS 132

88.5	4,354,512
110	4,354,517

CLASS 134

104	4,354,513
152	4,354,514
167 C	4,354,515

CLASS 136

254	4,355,195
259	4,355,196

CLASS 137

98	4,354,516
112	4,354,518
312	4,354,519
543.23	4,354,520
571	4,354,521
614.02	4,354,522
614.18	4,354,523
624.14	4,354,524
625.48	4,354,526
625.5	4,354,525
625.63	4,354,527
875	4,354,528

CLASS 138

96 T	4,354,529

CLASS 139

54	4,354,530
66 R	4,354,531
384 B	4,354,532
435	4,354,533
	4,354,534

CLASS 140

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CLASS 141

383	4,354,536

CLASS 144

193 C	4,354,537
335	4,354,538
338	4,354,539

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CLASS 148

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6.14 R	4,354,881
12 R	4,354,882
127	4,354,883

CLASS 149

10	4,354,884

CLASS 150

3	4,354,541
34	4,354,542
50	4,354,543

CLASS 156

39	4,354,885
50	4,354,886
64	4,354,887
175	4,354,888
180	4,354,889
264	4,354,890
307.3	4,354,891
398	4,354,892
497	4,354,893
517	4,354,894
631	4,354,895
643	4,354,896
	4,354,897
647	4,354,898

CLASS 157

1.17	4,354,544

CLASS 159

13 A	4,354,899

CLASS 162

106	4,354,900
158	4,354,901
300	4,354,902

CLASS 164

457	4,354,545

CLASS 165

1	4,354,546
25	4,354,547
41	4,354,548
62	4,354,549
133	4,354,550
166	4,354,551

CLASS 166

90	4,354,552
244 C	4,354,553
321	4,354,554

CLASS 172

4	4,354,555
19	4,354,556
49.5	4,354,557

CLASS 174

37	4,355,197
66	4,355,198
68.5	4,355,199
140 S	4,355,200
166 R	4,355,201

CLASS 175

45	4,354,558
71	4,354,559
267	4,354,560
321	4,354,561

CLASS 177

210 EM	4,354,562
212	4,354,563

CLASS 178

18	4,355,202

CLASS 179

1 G	4,355,203
1 SA	4,355,204
2 A	4,355,205
18 DA	4,355,208
18 FA	4,355,209
18 FC	4,355,207
18 HB	4,355,206
84 VF	4,355,210
90 K	4,355,211
100 C	4,355,212
146 R	4,355,213
170.2	4,355,214
175.31 R	4,355,215

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19 H	4,354,564
54 B	4,354,565
68 P	4,354,566
73 C	4,354,567
197	4,354,568
211	4,354,569
219	4,354,570
271	4,354,571

CLASS 181

116	4,354,572
239	4,354,573

CLASS 184

1.5	4,354,574

CLASS 187

12	4,354,575
29 R	4,354,576
	4,354,577
71	4,354,578
95	4,354,579

CLASS 188

4 R	4,354,580
71.9	4,354,581
196 M	4,354,582

CLASS 190

18 A	4,354,583

CLASS 192

3.57	4,354,584
45	4,354,585
106.2	4,354,586

CLASS 194

100 A 4,354,587

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394 4,354,588
419 4,354,589
425 4,354,590
451 4,354,591
703 4,354,592
718 4,354,593
743 4,354,594
807 4,354,595

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147 R 4,355,219
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CLASS 201

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CLASS 204

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98 4,354,905
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192 EC 4,354,911
192 N 4,354,908
4,354,909
192 R 4,354,910
195 P 4,354,913
195 S 4,354,912
224 R 4,354,914
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